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Impacts of Rural Development Inputs Upon Population: A Micro-level Geographical Study in Northwest Zambia

by

Lee E. Weissling

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF Master of Science

Department of Geography

EDMONTON, ALBERTA

Fall 1986

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.....

Supervisor

.....

.....

Date Aug. 14, 1986

Dedication

This thesis is dedicated in memory of my father, The Rev. George F. Weissling who did not live to see me complete a Masters programme. He will always live, however, as an inspiration.

Abstract

Studies about Africa are often aimed at urban centres or populations of rural regions in general; there is a dearth of micro-studies in rural areas. This thesis focusses on a rural system at a micro-level at Lwawu Mission in Northwest Province, Zambia. Data were gathered in June and July, 1985 by interviewing indigenous residents, observation, and discussion with missionaries and researchers familiar with the study area. The study concentrated on settlements within 3 km of Lwawu Mission. The indigenous population in the study area was estimated at 1200 people. Interviews were conducted amongst 119 adults. The primary purpose of this thesis is to present research about rural Africans at a micro-level emphasizing aspects of population geography and for the discussion ~~of~~ their social, economic, and ecological conditions. The objectives of the study were the following:

1. To determine the relationship between rural development and spatial patterns of settlement in the study area.

2. To describe and discuss demographic characteristics of Lwawu residents and their changes caused by processes of rural development.

3. To record and analyze perceptions and attitudes of indigenous people towards measures of rural development and the implications of these perceptions.

Data obtained led to formulation of a conceptual framework which links rural development inputs to spatial, demographic, and attitudinal elements of the population of Lwawu. Findings related to these linkages helped in discussion about the impacts these elements appeared to have had on the rural system of the area.

Lwawu Mission, because of its continuous development efforts, has become a centre offering numerous services for local residents. This led to increases in rural-rural migrants into or within the area. Evidence indicated that the Mission, in the opinions of indigenous residents, has a high place utility and is a positive choice of destination for migrants. This has resulted in indigenous people intending to live permanently in the area. Because of this and the continuous influx of migrants, especially refugees from Angola, the carrying capacity of the land has been

exceeded and socio-economic and ecological imbalances are occurring. To cope with changes to their culture, economy, and land, individuals appeared to have chosen several strategies of survival. Suggestions are made in this thesis that the most successful strategy in the future will be to live away from the immediate geographic and social space around the Mission but still remain close enough to obtain its services. Recommendations for development agents working in rural systems such are Lwawu are offered. These are based upon helping to satisfy the basic needs of indigenous residents.

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I would like to thank my supervisor, Dr. L. Kosiński for his help and support during the time I was a Masters student. The members of my defence committee also provided helpful comments and guidance about the thesis. They are Dr. S.I. Smith and Dr. J. Crush of the Department of Geography and Dr. D.S. Gill of the Department of Rural Economy.

Several people outside the University of Alberta also provided valuable comments and guidance for this thesis. They are Dr. Wim H.M.L. Hoppers of the Centre for the Study of Education in Developing Countries in the Hague, the Netherlands, Dr. D. Huckabay and Dr. J. Buttermore of the University of Zambia in Lusaka, Zambia, and Dr. K. Hansen of Northwestern University in Evanston, Illinois, USA. I am especially grateful to the people of Lwawu, Zambia who welcomed me and let me become a part of their lives for two months.

Words cannot express the gratitude and thanks I feel for my family and friends in Edmonton. Their support, friendship, and understanding have helped make Canada my home.

Finally, I wish to extend my heartfelt thanks to my mother. Because she is living in Colorado she has not been able to directly share in my academic pursuits but her continuous support for my endeavours is greatly appreciated.

Table of Contents

Chapter — Page

I. INTRODUCTION 1

A. Statements of Purpose and Objectives. 1

B. General Description of the Study Area. 2

II. OVERVIEW OF DEVELOPMENT CONCEPTS AND PROCESSES 7

A. Conceptual Framework of a Rural System. 7

B. Definitions of Developmental Processes. 8

III. DEVELOPMENT IN COLONIAL AND POST COLONIAL ZAMBIA AND LWAWU 11

A. Underdevelopment and Colonial Zambia. 11

B. Post Colonial Zambia. 15

Education: 15

Rural development programmes: 17

C. Development Inputs at Lwawu. 20

IV. RESEARCH METHODS 25

A. Preliminary Research. 26

B. Overview of Data Collection Methods at Lwawu. 27

Census survey: 28

Interviews: 29

Other surveys and interviews: 32

Quantitative analysis: 33

V. SPATIAL DISTRIBUTION OF SETTLEMENTS AND MOBILITY OF PEOPLE ..34

A. Derivation of Conceptual Framework. 34

B. Hypotheses Justification. 40

C. Patterns of Mobility Over Time. 41

Rural-rural migration: 41

Rural-rural circulation: 49

Rural-urban migration: 55

Rural-urban circulation: 61

D. Spatial Distribution of Villages in Lwawu. 66

E. Permanence of Settlement in Lwawu. 66

F. Conclusion. 67

VI. DEMOGRAPHIC CHARACTERISTICS OF LWAWU RESIDENTS 70

A. Size, Distributions, and Densities of the Lwawu Population. 73

Size of population per village: 73

Distributions and inferences amongst the sample population: 75

Population density: 81

B. Population Changes in Lwawu. 83

Comparison of Lwawu population data with Turner's data: 84

Changes in fertility: 86

C. Attitudes Towards Population Characteristics. 89

Views towards population processes: 89

Views towards ideal numbers of children: 91

D. Conclusion. 92

VII. ATTITUDES AND PERCEPTIONS TOWARDS DEVELOPMENT INDICATORS 101

A. Personal Observations of the Study Area. 102

B. Indicators of Welfare and Well-being of Lwawu Residents. 104

Food availability: 104

Village income levels: 110

Crop output: 113

Levels of health: 116

Overall well-being: 120

C. Conclusion. 123

VIII. IMBALANCES AND STRATEGIES OF SURVIVAL 125

A. Socio-economic and Ecological Imbalances in Lwawu. 125

B. Strategies of Survival. 128

Commercial farm: 128

Work for the Mission or related facilities: 129

Entrepreneurial endeavours: 131

Resort to hopelessness/deviate behaviour: 133

Move apart but within: 137

C. Conclusion. 138

IX. CONCLUSION 141

A. Negative Aspects of Lwawu Mission. 141

B. Positive Aspects of Lwawu Mission. 143

C. The Grey Area, or, Should the Mission in Lwawu be there? 144

D. Recommendations. 145

Spatial distributions and mobility: 145

Demographic characteristics: 146

Attitudes towards development indicators: 147

E. Strategies of Survival and their Effects on Spatial Distributions. 149

F. Final Comments. 152

References 153

Appendix 159

List of Tables

Table		Page
V.1	Autogenic and allogenic factors of mobility in surveyed villages.	50
V.2	Summary of patterns of mobility by period of migration, reasons to move, and previous location.	51
V.3	The number of people returning from fields and their load, for one day.	54
V.4	The likes and dislikes of urban areas according to Lwawu residents.	60
VI.1	Enumerated villages classified according to adult male/female ratios and their size and population structure.	74
VI.2	The proportions of children per village classified by village adult male/female ratios.	77
VI.3	The number of dwellings in each enumerated Lwawu village in 1985.	82
VI.4	A comparison of the proportions of adults and children between data from Turner (1950s) and L. Weissling (1985).	85
VI.5	A comparison of female:child ratios over time between various sources.	87
VII.1	Perceptions of changes in the availability of food since 1978 and 1964.	105
VII.2	Perceptions people had about changes in their village income since 1978 and 1964.	111
VII.3	Perceptions of changes in village crop output since 1978 and 1964.	114
VII.4	Perceptions of general changes in people's health since 1978 and 1964.	117
VII.5	Perceptions people had about their overall well-being.	121

List of Figures

Figure		Page
I.1	Location of Lwawu in relation to urban and economic centres of Zambia.	3
I.2	Location of Lwawu in relation to Mwinilunga, the administrative centre of the district.	4
I.3	The Lwawu region showing major rivers and settlements.	6
III.1	The study area and location of villages during the time of study, 1985.	23
V.1	The conceptual framework upon which this thesis is based.	35
V.2	The legend for maps on figures V.3-V.7.	42
V.3	Lwawu 1955-1964: The date a village moved, the previous location, and the reason it moved.	43
V.4	Lwawu 1965-1975: The date a village moved, the previous location, and the reason it moved.	44
V.5	Lwawu 1976-1980: The date a village moved, the previous location, and the reason it moved.	45
V.6	Lwawu 1981-1983: The date a village moved, the previous location, and the reason it moved.	46
V.7	Lwawu 1984-1985: The date a village moved, the previous location, and the reason it moved.	47
V.8	The number of villages and the year that they moved to or within Lwawu.	52
V.9	The 1984 locations of males from Kanongesha who graduated from St. Kizito School.	58
V.10	The origins of students who attended St. Kizito School and came from the Mwinilunga area.	63
V.11	The origins of students who attended St. Kizito School and came from northwest Zambia.	64
V.12	The origins of students who attended St. Kizito School and came from other parts of Zambia.	65
VII.1	Villages where interviews were conducted.	106
IX.1	A framework for development agents in a rural system such as Lwawu.	150

List of Plates

Plate		Page
VI.1	Total population of each village along Mission Road and their proportion of males, females, and children.	78
VI.2	Total population of each village along Ntambu Road and their proportion of males, females, and children.	79
VI.3	Total population of each village along Cobra Road and their proportion of males, females, and children.	80
VI.4	Respondents of the women's survey, not all the children pictured are their own.	88
VI.5	Comparison of proportions of males, females, and children between data from Turner 1950s, Zambia census 1969, UN 1977, and L. Weissling 1985.	96
VII.1	Several of the fish ponds near Lwawu Mission.	109
VIII.1	Mr. Nilole sitting by his house which is under construction.	130
VIII.2	Mr. Katoloshi in front of his tearoom, holding his child, and sitting by his wife. The other people are unknown.	132
VIII.3	An employee of the health centre and his family.	134
VIII.4	An unemployed man originally from Zaire. It is unknown whether all the children are his.	135

I. INTRODUCTION

A. Statements of Purpose and Objectives.

The choice of topic for this thesis was influenced by my desire to study population processes of rural Africans near Lwawu Mission, Zambia. Extensive travels throughout Africa in 1974, 1979, and 1983 made me keenly interested in the people and land of the continent. As a graduate student I chose to return there to conduct research for this thesis. Lwawu Mission was the logical choice for a study area as my cousin has been a missionary in Zambia since 1957. I had visited the region twice before and was therefore familiar with the area. On these previous visits and by personal communication with Mission personnel it became evident that very few geographical studies had been done in the region. Indeed, for the province in which Lwawu Mission is located, David S. Johnson (1980b:1) states,

> ...the amount of research carried out in North-Western Province ...is paltry compared with the work that has been done elsewhere. One could cite innumerable references for the other regions and peoples of Zambia: for this area the list is noticeably short.

It was evident that a need existed for more information about people in the area. Also, studies about Africa are often aimed at urban centres or population of rural regions in general; there is a dearth of micro-level studies in rural areas. The overall purpose of this thesis, therefore, is to present research about rural Africans at a micro-level, emphasizing aspects of population geography and to discuss their social, economic, and ecological conditions.

In the study area, Western and non-indigenous inputs directed at benefiting the local population were viewed as development efforts. These efforts by and large were a result of the contributions and services provided by a Roman Catholic Mission at Lwawu. In addition, government and international aid agencies have facilitated development efforts. In keeping with the overall purpose of this thesis, the impacts and effects of rural development efforts were analyzed from a grass roots level, i.e. the individuals who are affected by rural development were consulted as sources to indicate the success or failure of development efforts. Thus, another purpose of this thesis is to describe the impacts of development upon a local population

by analyzing the attitudes and perceptions of people affected by inputs aimed at developing the area.

Several objectives were derived from the stated purposes of research. These were concerned with the relationships between rural development and the changes to and characteristics of the local population in the Lwawu area. Specifically, the objectives were as follows:

1. To determine the relationship between rural development and spatial patterns of settlement in the study area.

2. To describe and discuss demographic characteristics of Lwawu residents and their changes caused by processes of rural development.

3. To record and analyze perceptions and attitudes of indigenous people towards measures of rural development and the implications of these perceptions.

Spatial patterns of settlement, demographic characteristics, and perceptions and attitudes of indigenous people as presented and described in this thesis were relatively easy to quantify. It was more difficult to link rural development with these descriptive measures. Attempts were made in this thesis, based on qualitative data, to draw conclusions and conjectures about these interactions even if they could not be supported by rigorous statistical procedures.

B. General Description of the Study Area.

Lwawu is located in Northwest Province, Zambia (Figure I.1) at 11° 37′ South and 24° 4′ East. Its peripheral location is best illustrated by the fact that it is only 7 km east of the Angolan border but 550 km northwest of the Copperbelt city of Kitwe. Access to Lwawu is over dirt roads, the main one connecting with Mwinilunga (50 km to the east) which is the administrative centre for Mwinilunga District (Figure I.2). Lwawu is at a relatively high altitude of 1320 metres. The rainy season extends from November to April and dry season from May to October. The soil is of the Kalahari contact type ranging from grey sand to reddish clays. Generally, these are of low agricultural productivity. Rainfall is heavy during the rainy

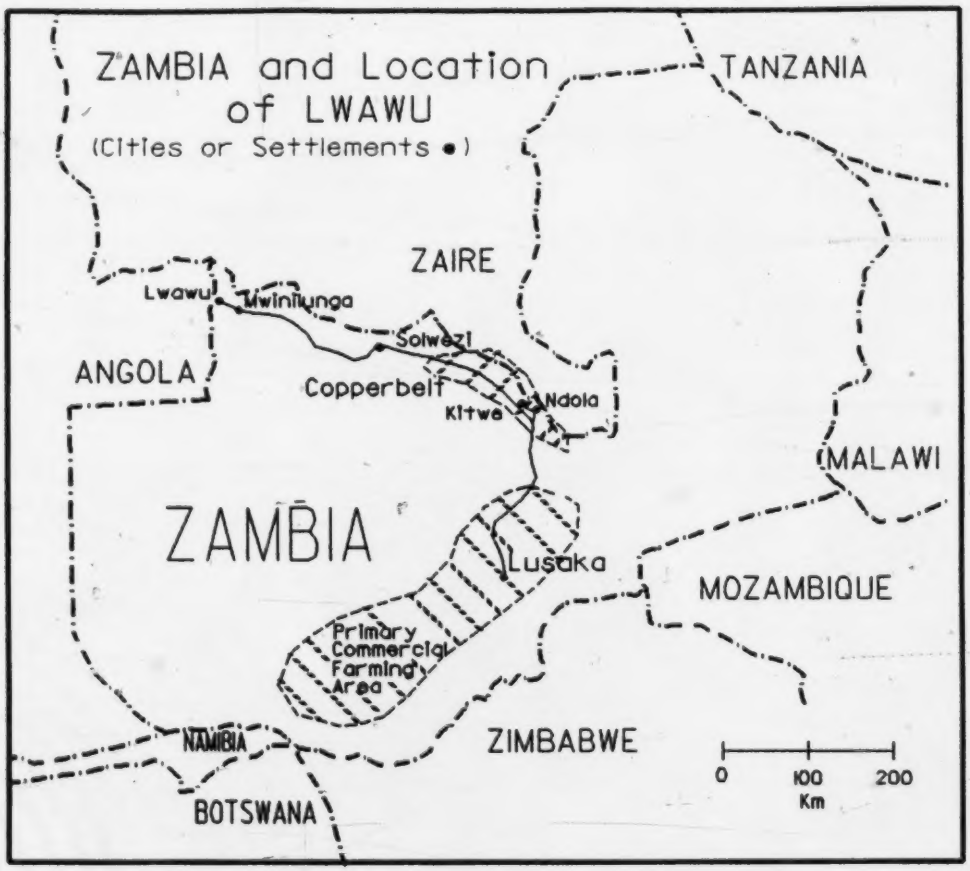

Figure I.1 Location of Lwawu in relation to urban and economic centres of Zambia.

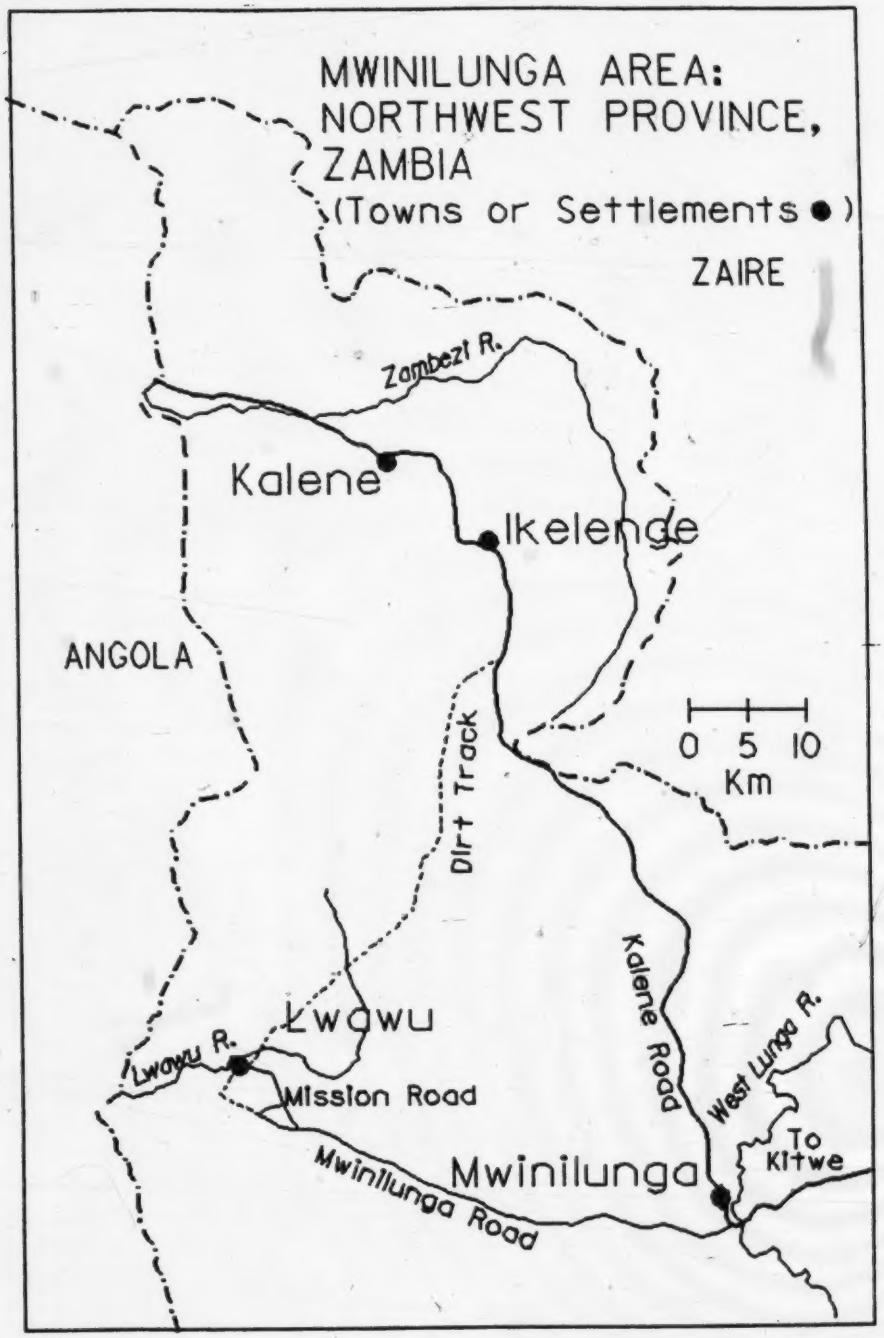

Figure I.2 Location of Lwawu in relation to Mwinilunga, the administrative centre of the district.

season (1400 mm per year). The area is adequately endowed with water in perennial streams and springs and a shortage of water in not a problem. Drought also has not been a major environmental constraint for the Lwawu area. Because water is always available, irrigation has not been practised. Indigenous people of Lwawu are mainly subsistence farmers and traditionally were shifting cultivators practising *chitemene* cultivation (Johnson 1980c). Cassava is the staple food and is easy to grow. Maize is also important as a commercial and subsistence crop but because of quick exhaustion of the soil, yields are often low. Finger millet is grown primarily for making beer. Small scale food crops grown in individual gardens include beans, sweet potatoes, groundnuts, tomatoes, onions, and other vegetables. Hunting was traditionally a major activity but because of overhunting the area is now essentially devoid of game and the nearest hunting grounds are across the border in Angola.

Indigenous people of the Mwinilunga District are Lunda, or as a subgroup, known as Ndembu. Mwinilunga District as a whole is relatively sparsely populated with a total of 63,000 people in 21,120 square kilometres or a density of 3 per square kilometre, based on 1978 population estimates (Johnson 1980a). The region in which Lwawu is located is called Kanongesha, after the Chief. Kanongesha includes large parts of Mwinilunga District. For this thesis, only a small portion of Kanongesha is described. This is termed the Lwawu region (Figure I.3). Major settlements within this region are also shown in figure I.3. The Lwawu study area, which is smaller than the Lwawu region, is described in greater detail in subsequent chapters.

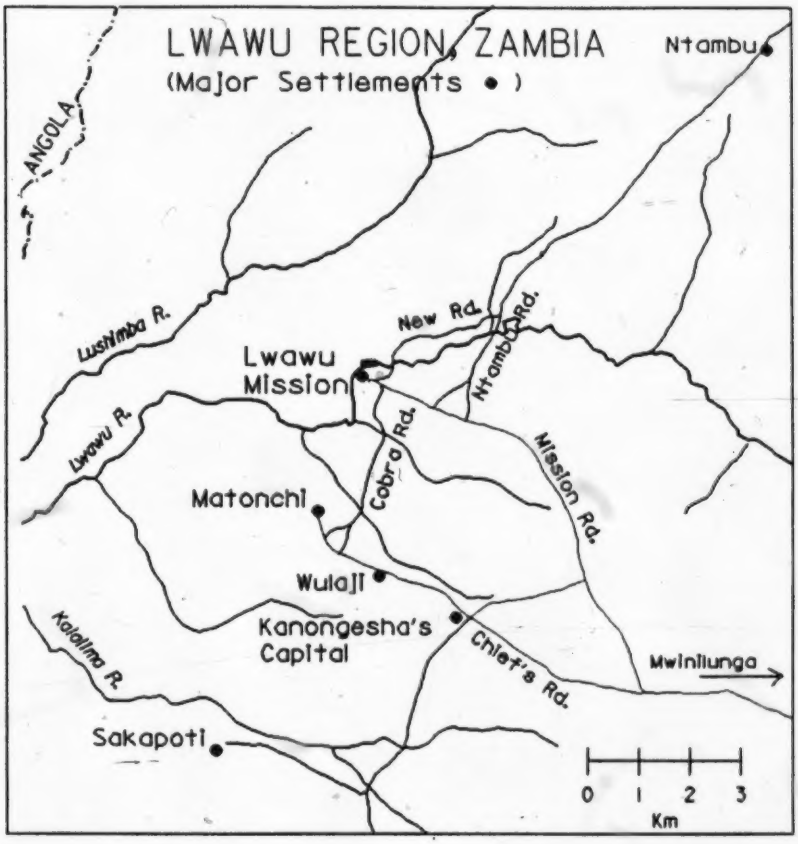

Figure I.3 The Lwawu region showing major rivers and settlements.

II. OVERVIEW OF DEVELOPMENT CONCEPTS AND PROCESSES

A. Conceptual Framework of a Rural System.

Before analyses of rural population processes and characteristics at a micro-level, a conceptual framework of the interactions which comprise a system needs to be attempted. No aspect of life is isolated but is part of a whole. This whole is a system which consists of in- and outflows between many socio-ecological realms of the environment. The concept is outlined by Garcia and Escudero (1982). They discuss the constant interactions which exist between and amongst various aspects of the ecological and socio-economic systems of any given region. The present study of a rural population used this framework as a conceptual foundation. Research focussed primarily on components of the socio-economic realms of Lwawu and how they affected the ecology of the area.

Human settlement was analyzed as well as interactions between it and the agrosystem, means of production, and consumption goods. In addition, cultural factors which affected human settlement were discussed. All these factors are encompassed in an area's human system. A specific conceptual framework for Lwawu is presented in chapter V. The concepts as presented above conform to the System Model of Development as discussed by McGranahan (1972). He stresses that under this model, development is an evolving set of factors that influence and are influenced by each other, directly or indirectly. One difficulty with this approach is that all of us have an imperfect knowledge of the influences of different factors upon each other. We can get a fair idea of these interactions by "statistical correlations,... empirical observations and common sense" (McGranahan 1972:99). Influences within a rural system can originate internally (indigenous residents themselves), externally (outside or non-indigenous forces), or a combination of both. This thesis will focus upon externally produced inflows affecting the human system of Lwawu. Generally, these external forces were treated as rural development efforts. Before describing these efforts at Lwawu an overview of rural development in general is presented.

B. Definitions of Developmental Processes.

Many definitions are used to describe development but these usually encompass several processes which are not necessarily the same. Development is merely one of four processes affecting most of the developing world, the others being change, growth, and modernization. As outlined by Knight and Newman (1976) change, growth, development, and modernization are sometimes used interchangeably but there are meaningful distinctions between them. Change refers to any alteration in society or its structure, institutions, or behaviour. These may result from internal innovation or from cross-cultural contacts and may be voluntarily or involuntarily imposed. Growth is simply an increase in magnitude, such as population growth or economic growth, but does not necessarily require accompanying change. Development is a linkage between economic growth and change. Included are inputs such as schools and health facilities along with increased productivity resulting in greater economic flows and increased human welfare. Growth and change are also a part of modernization but with the added element that growth and change are seen as heading in a specific direction. Knight and Newman (1976) state that modernization is a form of development leading to processes which are similar to those in the Western world. In geographic terms, the process of modernization involves spatial diffusion of cross-cultural contacts and institutions moving from the urban foci and spreading along communication and transportation systems to bring new ideas, techniques, and ways of life to rural areas (Riddell 1976). In general, these concepts refer to development processes rather than development inputs or programmes. Because development inputs or programmes are such an integral part of rural Africa, further discussion of these terms is needed.

Rural development programmes are usually directed towards specific goals and objectives to bring about development processes in any given area. Generally, development programmes can be considered as "the set of measures taken to promote access to natural resources, income growth, better income distribution, increased involvement in economic decision-making and preservation of natural resources..."(FAO 1984). Definitions such as this,

out of necessity, are geared towards a macro-level. It would not be feasible to incorporate regional specific characteristics into general descriptions of development. This review of development programmes, therefore, is from a macro-level viewpoint but is later related to a micro-level study.

Two different strategies to implement development programmes can be identified and a brief discussion of them is necessary to better understand the nature of development at a micro-level. One strategy is generally associated with large-scale international organizations such as the World Bank. This approach can be termed capital intensive rural development. Central to this is the philosophy that rural development "is concerned with the modernization and monetization of rural society, and with its transition from traditional isolation to integration with the national economy" (World Bank 1975:3). The World Bank's approach to problems associated with the agrarian poor is to provide opportunities to improve the provision of efficient and sustainable productive income-earning opportunities to the rural farmer, especially the smallholder (Please and Amoako 1984). Incorporated into this is an emphasis on producing crops which can be exported and therefore bring in income on a national level. This income , in theory, will eventually trickle down to the rural farmer. Elements of a general strategy to achieve improved productivity include a reform of incentive structures to ensure better prices for produce, a provision or rehabilitation of existing infrastructure, small-scale irrigation, rural roads, and a major effort in research on crops and livestock (Schultheis 1984). To raise production and, consequently, incomes, elements of modernization must also be used such as new and high yield seeds and crops, fertilizer use, and increased mechanization. Even with these inputs, however, development cannot occur without accompanying national government policies supporting these efforts. Most international agencies have attributed the crisis of declining or stagnating agriculture production to government policies which inhibit or discourage agricultural growth (Berry, S. 1984). Overall, capital intensive development programmes may be viewed as taking a 'top down' approach when implementing projects.

People and agencies who plan rural development as capital intensive are often criticized by those who espouse a different strategy to development, that termed integrated rural development. One of the arguments against capital intensive development programmes is that reliance on export oriented growth leaves farmers open to the uncertainties and negative consequences of price fluctuations, declining terms of trade , and the unreliability of food import and distribution systems (Schultheis 1984). In addition, inputs aimed at modernization of farms and technologies are often inappropriate and often favour wealthier individuals, thereby not benefiting the truly needy (Findley 1981). Integrated rural development efforts try to utilize and develop human resources from a grass roots level in a 'bottom up' approach. Basic premises to this approach are known as appropriate technologies and are adapted to the target populations' social, cultural, and ecological environment (Koloko 1979), encourage participation by those individuals who are the recipients of aid in planning and controlling goals and objectives of development programmes (Gran 1983b), and integrate human resources with all facets of developmental processes (Condé et al. 1979).

As concepts, both capital intensive and integrated rural development programmes may be defined in the broad contexts as outlined above. Regardless of how programmes are implemented, however, an objective of this thesis is to determine if processes are causing changes to the rural system of Lwawu which are in line with what development programmes aim to achieve. More importantly, no matter what the goals and objectives of development efforts are at Lwawu, their success or failure ultimately depend upon how the target population views these efforts. Individuals' perceptions and attitudes towards the effects of development programmes are the bases of inferences about the impacts of rural development on a micro-level. More specifically, the impacts that development processes have upon aspects of population geography in Lwawu are analyzed. These aspects are migration, patterns of settlement and reasons for these patterns, demographic characteristics, and the relationship between local residents and their natural environment.

III. DEVELOPMENT IN COLONIAL AND POST COLONIAL ZAMBIA AND LWAWU

A. Underdevelopment and Colonial Zambia.

To more fully understand the effects of colonial administration over the territory now called Zambia, the concept of underdevelopment needs to be discussed. The roots of models explaining underdevelopment stem from the harsh socio-economic conditions which face Africans today. Most experts agree that rural African systems have deteriorated economically since colonial rule began. Traditional economic models stress that development should be based on export growth stimulating the spread of modern productive activities from urban centres to peripheries (Seidman 1979). Theorists espousing this view maintain that rural poverty is perpetuated because indigenous people's attitudes and traditional institutions hinder the emergence of the necessary entrepreneurial behaviour required to create opportunities to expand the export sector of their national economy. Other models focus on the concept of underdevelopment which many researchers have discussed throughout the 1970s and 1980s. Generally,

> underdevelopment defines the socio-political and socio-economic situation of any society which is no longer structurally able to achieve the self-determination of its political superstructure and its economic basis. The caused of this lie in the external influences which are superimposed upon distorted traditional structures. The external force is defined as colonialism or imperialism (Biermann 1979).

Evidence exists to indicate that before colonial domination Africa was progressing on its own with innovation leading to political and economic changes (Stryker 1977). These changes were crushed or subordinated by European rule so that indigenous development was blocked. Africa was ***undeveloped*** compared to Europe but became ***underdeveloped*** through exploitation for purposes of European development. By extracting human labour and natural resources from rural areas along with imposition of cash cropping and increasing the dependency for European commodities, Africans were forced into a world market economy. Africans were unable, however, to gain enough capital to benefit from it. The result was a growing and continuous dependency on Western capitalism and centres of commerce within Africa. This dependency led

to the emergence of many economic and political cores of the continent which drained peripheral areas of their livelihood and traditional means of production. As an example, Parsons and Palmer (1977) state that the traditional agricultural pratice of shifting cultivation was suited for the harsh physical environment of Central and Southern Africa. When colonization commenced, European methods of farming were imposed such as deep ploughing and an emphasis of crop rotation rather than fallow. These methods have had disatrous ecological effects upon the land and ultimately have inhibited the rural African's ability to produce food for personal consumption. Along with these new methods of production came economic constraints because of the needs of urban areas for food. The choices of crops grown were determined by those in the economic and political cores of the territory. People who lacked the capital and expertise to produce these cash crops or who lived in areas unsuited ecologically or geographically to grow them were excluded from participation in this form of agriculture (Muntemba 1977). In addition, prices paid for produce were often kept artificially low. Rural Africans were dependent on the market economy and if they did not have the resourses to attain enough income to satisfy their needs they became enmeshed in a state of underdevelopment with little hope of recovery of improvement.

Up to the eighteenth century the area which is now Zambia was unaffected by non-African social and economic forces. The Portugese in Mozambique during the late 1700s were the first to involve parts of Zambia in regular trade with the outside world. By the mid-1800s trade in ivory, copper, and slaves was common with Portugese in both Mozambique and Angola. Also, by this time Jesuit (Roman Catholic) and Plymoth Brethren (Protestant) missionaries had a firm presence in the territory. It was not until the late 1800s that Zambia was created as a geographical unit under official rule by Europeans. The partition of Africa amongst European powers resulted from the increasing need for cheap raw materials and by the growing rivalry between major European states (Roberts 1976). To make it easier to satisfy these demands it was necessary to directly control human labour and natural resourses. Throughout the 1880s and 1890s Cecil Rhodes played a major role in gaining control of central

Africa for Britain. As a representative of his own company, the British South Africa Company (BSA), he negotiated with African chiefs and European powers for territory and its mineral resources. By the end of 1891 the BSA had gained the right to administer and occupy the land north of the Zambezi river, effectively placing the area in the British Empire. In 1897 the territory became officially known as Northern Rhodesia. The territory did not initially provide economic resources for the BSA. In the early 1900s Northern Rhodesia was more important as as source of human labour for mines in Katanga (now in Zaire) and southern Africa than a provider of mineral wealth. Before industries were developed in Northern Rhodesia these mine labourers provided needed revenue for the BSA in the form of taxes they were compelled to pay. Throughout the first third of the twentieth century the need to obtain cash to pay taxes produced large migrations back and forth between villages and mines in Katanga and southern Africa (Beveridge and Oberschall 1979). Africans were thus forced to interact with colonial economies and ultimately many moved to industrial centres. When Northern Rhodesia established industries of her own in the early 1930s, Africans were already inexorably tied to a market economy. The only difference was they now also migrated within the territory instead of mainly to Katanga or southern Africa. Andrew Roberts (1976:178) writes, "These migrants needed cash, and not only to pay taxes, but to buy from European stores the imported household goods which were replacing the cloths and pots and hoes once made and bartered in the village".

By 1945 Northern Rhodesia was one of the world's major copper producers. Most mines were located along the Copperbelt (Figure I.1). Two major changes to rural systems resulted because of industrialization in the colony. One change occurred because mine related personnel and others living in urbanized areas needed food and other commodities for support. Because land in Northern Rhodesia with the most fertile soil was set aside for exclusive use by European farmers and settlers, these were the people who produced cash crops. Africans, meanwhile, were relegated and confined to reserves where shifting cultivation was restricted. Soil was much less fertile in these areas and was not given time to regenerate. Erosion and

destruction of woodland soon occurred which reduced the resources for African food production. In general, colonizers, settlers, and colonial governments in Africa had three major agricultural aims: to provide food for themselves; to grow export crops for their overseas markets; and to "improve native agriculture" (Berry, E. 1976). To most colonists, however, improving native agriculture meant imposing on the rural African new types of wage labour, new forces of the market economy, new crops and methods of cultivation, and other forms of change. A second factor contributing to changes in rural Northern Rhodesia resulted because of the need for labour in the growing copper industry. Labour was readily available in rural areas and consequently massive rural-urban migration of men occurred. The subsistence agriculture of many African villages was severely handicapped by the absence of so many men (Roberts 1976). Urban conditions discouraged most married men from bringing along their wives, children, and elderly parents. As a result, many families were left in their village to feed themselves without the aid of their major bread-winner. At the time of independence the Zambian government took over an economy based on urban and industrial sectors or large commercial agricultural ventures, all run by Europeans. A half-century of economic evolution from traditional subsistence to integration into a market and world economy was a major characteristic of rural systems in the new nation. The Lwawu area, however, was not as affected as other regions of the territory. Two factors contributed to this (Hoppers 1981). First, the physical distance from the Copperbelt and political centres of the country meant that contacts were difficult, slow, and piecemeal. Second, the Mwinilunga area had little to offer in terms of exploitable resources. Nevertheless, Lwawu cannot be considered isolated. Interaction with a market economy commenced during colonial rule and is an integral part of the socio-economic system of Lwawu today.

B. Post Colonial Zambia.

When Zambia gained independence from the United Kingdom on 24 October 1964, many vestiges of colonialism remained. The economy was still heavily dependent upon copper exports and most managerial and professional positions in commerce and services were held by Europeans. Zambia's first and only president, Kenneth D. Kaunda, soon embarked upon reforms to bring control of industry and business into the hands of Zambians. Also, by the 1970s increasing agriculture output became officially recognized as an important objective to better the lives of Zambian citizens. In response to the need for Zambian controlled and managed business and industry and the necessity to increase agricultural yields, the government initiated strategies which directly affected most rural areas. Two of these strategies are discussed in this chapter. These are a provision of schools to assure universal education and implementation of development programmes designed to increase agricultural productivity. After this, specific development inputs at Lwawu are listed.

Education:

The general view of the Zambian government after independence was that education was the mainstay of development (Hoppers 1981). Economic progress in all relevant sectors depended on a solid base of educated indigenous personnel. The Transitional Development Plan (1965-1966) established the government's educational policy. The aim was for universal primary education which would consist of 7 years of schooling in two sections: Lower Primary (4 years) and Upper Primary (3 years). Secondary education was planned to expand as quickly as possible. Secondary schools consisted of Form 1, Form 2, and Senior Secondary. By 1970, 90% of the target for total primary school enrolment was reached (Hoppers 1981). Almost 97% of children aged 7 years were estimated to be in Grade 1 of Lower Primary in 1978 (ILO 1981). These figures were not without imbalances. In rural areas, about 20% of the students enrolled in Grade 4 of Lower Primary school were not able to continue their education because of lack of facilities. Also, usually the poorer and more remote areas of Zambia were not provided with

schools. Nevertheless, access to education, at least at a primary level, was available to most of the rural population.

Provision of facilities is not the only measure of educational progress. The outcomes of becoming educated and what one is educated in must also be taken into consideration. At independence and the following five or so years, the need for educated and trained personnel was great enough so that there usually were jobs for most graduates. Curricula were designed which emphasized skills and knowledge needed for an emerging industrial-based society. From 1965-1970 the annual percentage growth rate for wage employment was 5.1%. By the 1970s, though, Zambia's national economy began deteriorating under the effects of worldwide recession, a fall in copper prices, and war with white-ruled Rhodesia. Real GDP was reduced by 29% from 1974 to 1977 and over six years from 1974 to 1980 real GDP per capita fell by 52%, a terrible decline by international standards (ILO 1981). The government was forced to borrow money. This, along with inflationary pressures, led to a decline in the rate of hiring, especially amongst the civil service which was traditionally an easily available source of employment for educated Zambians. In addition, often foreign investment and revenue from copper tended to be channelled into manufacturing luxury items for the high-income urban elite (Seidman 1979). Typically, the equipment needed for these industries was relatively capital intensive and the number of jobs required for them was limited. Consequently, the Zambian economy was no longer able to support employment for the many people being educated in schools throughout the country.

In response to these and other situations, the Zambian government intitiated the Second National Development Plan for 1972-1976. Included in the Plan were comments on the national education system. It recognized that schools should bear the major responsibility for directing the attention and expectations of young people away from urban wage-employment to rural self-employment (Hoppers 1981). This was based on the assumption that schools were instilling ideas in students, directly or subliminally, that made rural life look inferior to the lure of urban living. At the same time, skills and knowledge were being obtained in rural schools

which were not relevant for an agriculture environment. This new philosophy was not implemented, however, in actual rural curricula. Official government policy by 1977 emphasized that primary education should follow the *traditional* ideal of being an extended basic education. Grades 1 to 7 were seen as providing general education with some practical skills but with more emphasis on ensuring a foundation for further education. Only upon entering Grades 8 and 9 would emphasis be placed on an applied approach to acquire productive and useful skills. Thus, primary education (which is most available to rural areas, including Lwawu) continues to rely on the basic fundamentals such as reading, writing, arithmetic, and social studies.

Rural development programmes:

As is the case with many Third World countries, Zambia has the potential to become self-sufficient in essential foods (Cowie 1979). The realities of the situation are far from the ideal. Zambia has clearly made advances in food production since 1964 but the results are short of what is needed. Commercial production of maize almost tripled between 1964 and 1972 although Zambia had to import maize from Rhodesia in 1970. Sugar, vegetables, groundnuts, pig, and poultry production have all increased since 1964. Yet, in 1974 imported food accounted for 40% of the total value of marketed foodstuffs, more than double the value of 1964 (Roberts 1976). Overall, the agricultural record since independence is disappointing. Some of the blame for poor agriculture performance rests on the fact that Zambia is a highly urbanized nation. In 1979 Zambia's population totaled 3,369,000 in rural areas and 2,280,000 (40%) in towns and cities of more than 20,000 people. Such a significant number of people in urban areas has led to government policies catering to urban populations (who generally have more political power and influence on policy than rural populations). Food prices are often kept artificially low to keep urban residents satisfied. Consequently, there are few incentives for rural farmers to produce more food. In addition, many areas of Zambia have natural disadvantages such as infertile soils and inadequate water supplies. Whatever the reasons the rural farmer has not fared well since entering the market economy. As the International Labour Organization (ILO)

(1981:xxvi) states, "we find no evidence to suggest that the real incomes of the mass of subsistence farmers have done anything but deteriorate".

The Zambian government has tried to alleviate the problems associated with agricultural production. The Second National Development Plan (1972-1976) and subsequent policies have made efforts to form strategies for development programmes. Priority was given to the creation of new employment and income opportunities and to improve the infrastructure so as to increase rural productivity and counteract migration to urban areas (Hoppers 1981). Tarmac roads were built to all provincial centres and rural health clinics, schools, and agriculture depots were constructed. Provisions were also made to provide agriculture extension agents to rural areas. The official goals and objectives of the Department of Agriculture in Zambia as stated in a 1982-1983 agricultural report (Dept. of Agriculture 1983) are: to impart technical knowledge and advice to increase levels of production to become self-sufficient in food and to export surplus crops and earn foreign currency which will raise incomes and standards of living for rural people. According to the report, the ways to achieve these are to: provide individual farm visits by extension staff, hold courses for farmers at training centres, and provide group discussions by radio forums, field days, demonstrations, etc. Even with a whole realm of natural and economic constraints , the Zambian government paints an optimistic picture of its ability to increase productivity of agricultural commodities (Zambian Government, no date).

The ILO (1981), however, lists three major problems which have resulted in these government services and policies <u>not</u> leading to enhanced development processes. They are: a lack of recurrent resources, inadequate staff conditions, and the inappropriateness of some services. As an example of the lack of recurrent resources, the ILO states that one provincial officer with 14 vehicles had a recurrent budget for fuel and maintenance far less than necessary to keep the vehicles operating. Consequently, 18 out of 20 drivers were idle. Inadequate staff conditions also inhibit effective programmes. Regardless of whether the government provides extension agents to rural areas, if the staff conditions are such that they adversely affect the

agent's performance the agent can be of little assistance to the rural farmer. Problems with inadequate housing, low salaries, and isolation all diminish the effectiveness of the agent. In the 1982-1983 Northwestern Province agricultural officer's annual report mention is pointedly made that the agriculture department staff morale is very low due to bad housing, unreliable transport, and no promotion opportunities (Dept. of Agriculture 1983). Development programmes must be an ongoing endeavour. Numerous examples can be cited indicating the inappropriateness of services provided by the government to many rural areas. These include installing mechanical water pumps which cannot be maintained with local resources, concentrating cash cropping on maize when many areas are unsuitable for growing it, and the tendency to construct physical structures and buildings and then not providing the money or resources to provide services offered from these structures. Dumont and Mottin (1979) make note of that often provision of health services is seen as curative rather than preventive. Rather than provide a physical structure (with, often, inadequate medical supplies) emphasis should be placed on preventive measures such as providing clean water supplies to villages.

The overall conclusion arrived at after review of literature concerning government efforts at planning rural development programmes is that programmes initiated by the government of Zambia are theoretically acceptable but in reality are not alwaysa appropriate to specific rural conditions and often are unsuccessful. Nonetheless, government sponsored development efforts cannot be ignored when studying rural systems in Zambia. Research at Lwawu attempted to investigate whether specific government development goals such as food self-sufficiency, exportation of crops, and increases in standards of living are being met. Regardless of who is implementing developmental processes in Lwawu or what their objectives are, these overall goals set by the government should be strived for anywhere in Zambia.

C. Development Inputs at Lwawu.

It is difficult to discuss development processes, programmes, and inputs causing development separately as all forces upon a rural system interact. This section of thesis lists only the development inputs which have been deliberately initiated in Lwawu. Discussion of the impacts they produce are in the data analysis chapters. Because no written study has been found related specifically to Lwawu, all information presented in this section was gathered from interviews or personal observation and one booklet published about Lwawu Mission.

A permanent European presence in the Mwinilunga region commenced in 1902 when Dr. Walter Fisher established Kalene Hill Mission about 70 km north of present day Lwawu (Figure I.2). The British colonial government posted a District Commissioner to Mwinilunga in the early 1900s and a colonial representative was present there until independence. A colonial European presence near Lwawu started with the arrival of two British settlers, Mr. and Mrs. Kenneth Paterson. In 1921 they established a farm at Matonchi 3 km from Lwawu (Figure I.3). Their home and farm were an integral part of the area until 1950 when Mr. Paterson died. While living at Matonchi their efforts were geared to making their farm prosperous and their living standards comfortable. According to Mrs. Paterson (1985), they employed many Africans as cow herders, field labourers, and servants. The Patersons provided land upon which the workers built their homes and could live. The only people allowed to live in the vicinity of Matonchi were those employed by the Patersons. Most of the region was sparsely populated. Although they saw to it that "their Africans were well cared for", no direct development inputs were initiated by them. In the words of Mrs. Paterson, the indigenous people did not want for anything. There was plenty of game for meat and clothing and enough food was grown to supply most of their physiologic needs.

Although not stated as such by the people who initiated them, direct development inputs at Lwawu began with the arrival of Roman Catholic Franciscan Fathers early in 1955. Fathers Rupart Hillerich and Adrian Peck located Lwawu Mission on the Lwawu River 3 km north of Matonchi. Because no other Roman Catholic Mission was in the immediate area and

the Church wanted to expand its influence, Lwawu was chosen as a Mission site. Bro. Louis Fouquette arrived later in 1955. All of these people were from the United States. In 1955 the area around the Mission site was almost uninhabited by Africans. Late in 1956 a road was built connecting the Mission with the main Mwinilunga-Kanongesha road (Cole 1984). During the first few years of residing at Lwawu, the missionaries concentrated their energies on evangelistic endeavours. A church was built along with residences for the missionaries. Once these were established, the Mission started providing services which may be viewed as development inputs. In 1960 Bro. Fouquette built a primary school which was funded, managed, and staffed by Zambian civil servants. From 1964 onwards, Roman Catholic Sisters also taught there. Also in 1964 two structures were built which played an important role in development efforts of the Mission. These were a health centre and an upper primary school. The health centre, which is still operating, was financed by the Zambian government and by support from the Roman Catholic Church. The centre provides free medical treatment for all clients. nursing staff consists mainly of Roman Catholic Sisters and for all practical purposes the centre is run and managed by the Sisters. The upper primary school, called St. Kizito, was built by Bro. Fouquette with Church financial support. St. Kizito was solely run by Franciscans. Bro. Joseph Weissling arrived at Lwawu in 1964 as headmaster of the upper primary school. He had spent the previous seven years in the Copperbelt. Teaching staff at the school consisted of Franciscan Brothers mostly from the United States. Major structures built since 1964 have been primarily Mission oriented, such as a convent, or government oriented, such as a depot for collecting commercial crops by the government marketing board (NAMBOARD). In August 1984 a structure was completed which has the potential for affecting development processes in the future. This is a hydro-electric scheme, financed by a Norwegian development agency with assistance from the Kitwe Rotary Club. It provides the health centre and missionary residences with 24 hour electricity. The Mission directly or indirectly provides other services and these are listed below. The entire study area at the time of research is shown in figure III.1. Note that reference in this thesis to the Lwawu region refers

to that shown in figure I.3 and reference to the Lwawu area to figure III.1 .

Missionaries of Lwawu Mission have not had a specific ideology or strategy for the implementation of development programmes or processes in the area. Projects are initiated as the need for them arises. The primary goal of the Mission is evangelization. Secondary goals are provision of education and health care for indigenous people. Education was especially important during the 1960s and 1970s. Since 1978 Mission staff has not been directly involved with implementing any formal schooling of Lwawu residents. From 1978 onwards, however, an effort has been made to provide agricultural assistance and services for farmers in the area. Specific services directly provided to area residents, as conveyed by Mission personnel, are the following (in no particular order of importance):

1. Providing use of tractors for ploughing fields, harvested crops, and transport of heavy objects
2. Providing NAMBOARD with a marketing depot on Mission grounds
3. Sponsoring and helping manage farming co-operatives
4. Providing transport for supplies (pick-up trucks, lorries)
5. Building up local cattle herds by selling improved cross-breeds (the Mission raises about 70 head of cattle)
6. Providing a mealie-meal (maize meal) grinder
7. Employing full-time and part-time wage labour
8. Managing and helping supply a health centre
9. Organizing and staffing night study for local boys
10. Allowing the government to use classrooms for a secondary school (starting in 1986)
11. Supplying outdoor tap water
12. Providing clothing (supplied by churches in Europe and USA)
13. Providing footballs and sports equipment
14. Providing repair services (for bicycles,etc.)
15. Running a pre-school

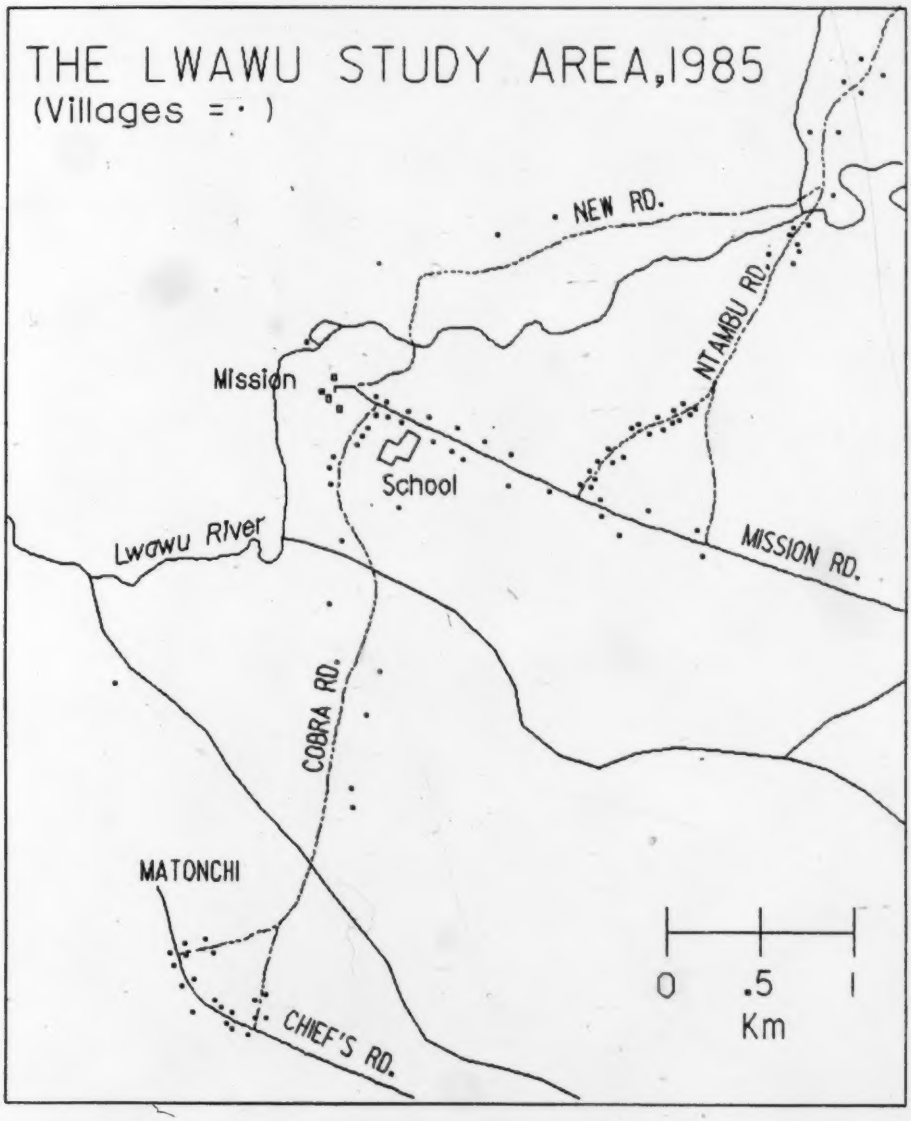

Figure III.1 The study area and location of villages during the time of study, 1985.

16. Buying produce from small-scale farmers

17. Organizing sewing classes and women's clubs

18. Delivering food to the needy

In addition, the government finances development inputs at Lwawu. These are a NAMBOARD marketing representative, a veterinarian, an agriculture extension agent, and a primary school. From about 1980 onwards the United Nations has financed and trained a number of men in fish farming. Ponds for these aquaculture projects are dispersed throughout the region. In conjunction with this, the UN employs a Zambian 'fish scout' who is technical advisor to the fish farmers. All these elements, provided by the Mission, government, or UN are treated as development inputs which to one extent or another influence processes of the Lwawu rural system.

IV. RESEARCH METHODS

In developing and conducting field research in the Lwawu area I used a recent World Bank publication as a useful guide. In this book, Casley and Lury (1982) identify a basic framework for monitoring and evaluating rural development projects. Monitoring consists of assessing whether project *inputs* are being delivered, are being used as intended, and are having the *initial effects* as planned. Monitoring involves interaction with and assessment of the management aspect of development programmes. Evaluation of projects focusses upon the *overall effects*, both intentional and unintentional, and *impacts* of rural development efforts. This involves analysis of the effects development projects have upon the people to whom they are directed. To distinguish the terms effects and impacts, statements by Casley and Lury (1982:3) served as a guide. They state,

> ... the difference is largely one of degree along three dimensions; namely time, scale, and scope. Effects will show through sooner, apply to the direct beneficiaries and relate to specific aspects of rural activity. The impact measures the final total result, taking into account direct and indirect effects and allowing for diffusion and initiation that produce changes in the community as a whole.

Because the purposes and objectives of this thesis are to analyze rural development at a micro-level and its impacts on a local population, the evaluation of developmental efforts at Lwawu were emphasized rather than the monitoring of these efforts. Both formal and informal, direct and indirect development inputs were considered. As mentioned previously, some were initiated by international or national government agencies. Most efforts, however, were implemented by the Franciscan missionaries at Lwawu.

The missionaries have not had development projects per se. However, they have made ongoing efforts aimed at initiating or supporting development processes in the area. Because of this, the efforts of the missionaries are analyzed as if they were a part of a formal development programme. When formulating the research design attempts were made to obtain data directed towards evaluating overall effects and impacts of development processes. This chapter reviews the methods in which data were obtained and analyzed. Each method is discussed separately.

A. Preliminary Research.

Background knowledge necessary to conduct research for this thesis has been acquired since 1969 when I started developing a keen interest in Africa and determined I would visit my cousin at Lwawu Mission upon graduation from high school. My first trip to Africa occurred during June and July, 1974. Two and a half weeks were spent at Lwawu and other places in the Copperbelt and Northwest Province of Zambia. In 1979 I travelled extensively for 3 months overland throughout the Sahara and tropical Africa. In addition, seven weeks were spent at Lwawu in May and June of that year. During this time I taught classes to the 5th grade at the government primary school adjacent to Lwawu Mission. From March to July 1983 I was trained as an agriculture extension agent and health service worker in Senegal and the USA for the United States Peace Corps. After 16 weeks of courses (6 weeks in South Carolina, USA, 10 weeks in Senegal) I determined my skills could be utilized better academically in graduate school than continuing with the Peace Corps. Course work in population geography, Africa, and related disciplines commenced in Sept. 1983 at the University of Alberta in Edmonton, Alberta. The overall outcome of my experiences and familiarity with Africa resulted in a choice being made to conduct research for a Masters' thesis on that continent, specifically at Lwawu Mission.

Research in Zambia began in Lusaka, the capital, on 26 May 1985. One and a half weeks were spent reading literature at the University of Zambia library about Northwest Province and topics related to the thesis. This library provided some references which were not available at the University of Alberta. The most helpful source for general geographic information of Northwest Province was the Zambian Geographical Association's book, North-Western Province (1980) , edited by David S. Johnson. For a cultural and anthropological perspective of the Lunda in the Mwinilunga area, V. W. Turner's book, Schism and Continuity in an African Society (1957) proved helpful. Other sources of information included reports written by colonial officials in Mwinilunga which were stored at the Zambian National Archives and agricultural reports on Northwestern Province which were in the

University of Zambia library. It is interesting to note that most professors and students I talked to at the University of Zambia expressed surprise at the fact I was conducting research in an area as remote as Lwawu. Also, all were very pleased that someone would study the area as there is little information about it. With this background knowledge in mind, I arrived at Lwawu on 8 June 1985 and proceeded to obtain data pertinent to the thesis. My field research at Lwawu continued until 26 July 1985. Literature review was also conducted in London, England in August 1985.

B. Overview of Data Collection Methods at Lwawu.

Field research at Lwawu consisted of three stages: renewal of contacts, formulation of research techniques, and collection of data. A priority upon arrival at Lwawu was to familiarize myself with the area and enable local villagers to become familiar with me. This was accomplished by spending the first week at Lwawu merely walking along roads and greeting people in their tribal language, which is Lunda. A daily journal, used throughout field research, was kept to record qualitative observations derived from these walks and other forms of interaction. The following hypotheses were formulated based on prior theoretical background, conversation with expatriate residents of Lwawu, and qualitative evaluation from observation of the Lwawu area (they will be discussed further in the data analysis chapters):

1. **As the Lwawu area developed, rural-rural migration and circulation within and to the area, and rural-urban migration and circulation away from the area increased amongst indigenous residents.**
2. **Settlements in the Lwawu area are concentrated spatially near service centres or accesses to them.**
3. **Settlements in the Lwawu Mission area are more permanent than in the past.**
4. **Development inputs have not altered attitudes concerning what is an ideal family size amongst indigenous residents of Lwawu.**
5. **In the opinion of indigenous residents of Lwawu, the degree of satisfying basic needs such as**

the availability of food, income levels, and overall levels of health have increased leading to improvements in general standards of living.

These hypotheses guided all subsequent research. A typology of criteria and classification used for conducting research in rural areas was followed as outlined by Casley and Lury (1982). They list criteria of investigation as the *scale* of enquiry in terms of phenomena to be investigated and the geographical coverage desired; the type of *interview* to be used; the method of *observation* and *measurement* required to collect the data of interest; and the *frequency* with which the collection has to be made. Each of these may be classified according to the structure of criterion used. Data collection for this research was based on the following:

Scale of enquiry: Village or community level; Specific site or institution.

Interview type: Open-ended questions; attitudinal studies.

Observation and measurement: Simple counts and measures.

Frequency: Single visit.

The following were specific methods employed to collect data in the Lwawu Mission area.

Census survey:

The most recent government census of Zambia was conducted in 1969 and published in 1973. Because more recent official data were unavailable or non-existent, a census survey was conducted for this research of all villages within a 3 kilometre radius of Lwawu Mission. This 3 km limit was imposed due to time constraints and the fact that people living farther away from the Mission were more suspicious of persons they did not know and less likely to answer questions. A simple definition of village was used for all research: a small group of houses in a rural district (Winick 1956). In general, any settlements distinct familially which had a distinct name was considered a village. Indigenous people referred to their settlements, whether large or small, as villages and when the term was used in conversation all people understood its meaning. For lack of a better word and to avoid confusion, all types of settlement, from one dwelling to many, were referred to as a village. In doing this I followed precedent found in

literature. Although she does not define the term village, Crehan (1981) mentions that many villages in her study area near Kasempa in Northwest Province, Zambia were comprised of no more than a single household. Information obtained from the survey was: the number of adult males, the number of adult females, the number of children, and the number of living dwellings in each village. In addition, an attempt was made to determine when the village moved to its present location, why it moved there, and from where it moved. (This information was also gathered from interviews.) Adult was defined as anyone who had completed puberty rites and was old enough to be available for marriage. For males this is usually at 14 to 16 years of age and for females, 12 to 14 years. It was rare that adults knew precise ages of their children. Information for the census was collected over 4 days with interviewing conducted in the afternoon, a time when someone usually was in their village. Several people were suspicious of who I was (a spy perhaps?) and refused to respond to inquiries. No attempts at interviewing were made in these situations. However, a total of 55 villages out of 75 were enumerated for this census survey.

Interviews:

It is generally agreed that perceptions and attitudes of indigenous people towards development processes are best determined by interview. In designing my interview schedule used during interviews I was conscious of the fact that the data collected had to be directly relevant to development activities and that the survey did not result in superficial data which would not adequately capture true development needs or priorities of the target population (Rhoda 1982). The objective was to first determine what development processes have occurred in the area and then formulate questions which could be asked of people to elicit responses indicating their attitudes and perceptions towards these processes. The responses to these questions illustrated the effects of development inputs as seen from the perspectives of the recipients of these inputs. On a personal level, interviewing gave me the opportunity to talk with individuals. The only statistical analyses amenable to responses were simple descriptions.

Thus, discussion of the responses is viewed only as an example of people's opinions. Even if not all of them can be subjected to exhaustive statistical analyses, they are sufficient for qualitative conclusions.

Questions were formulated based upon the hypotheses listed above utilizing knowledge obtained through study, discussion with people familiar with the topic and area, observation at Lwawu, and common sense. Questions were classified under the general headings of: permanence and village location, income, agriculture and food, migration, attitudes about urban areas, health, children, and population characteristics (see Appendix). After a pretest was conducted the number of questions was reduced as many seemed unnecessary or irrelevant in relation to the hypotheses of research. All questions were open ended but many had only a limited possibility of responses. Although the questions were designed to be amenable to a structured interview the method used to ask the questions was unstructured. Reasons for this type of procedure are the following:

1. All questions were orally asked the respondent, either through a translator, or directly by me when the interviewee could speak English. To provide answers to closed ended questions would be confusing to the respondent. Clarification was made, however, if the respondent did not understand the question.
2. Comments and insights were desired which could be elicited as a result of questions being open ended and interviews unstructured.
3. Not all questions were applicable to all respondents, therefore, an unstructured interview enabled some questions to be modified or deleted during the time of interviewing.

Point number three became especially relevant after several interviews were made. It became necessary to modify some questions. Many questions were not applicable or their answers too obvious to continue asking. For example, many small villages consisted of only an elderly man and his wife or wives. It was clear they no longer could work in fields so questions related to current agriculture output were inappropriate. Questions such as 'How many times a month do you eat the following foods?' elicited laughter from many respondents as, in their opinions, if

the types of food listed were available, people would eat them as often as possible. It appeared to me that people thought it ludicrous to be asked such questions.

A purposive sample was used to determine villages in which interviews would be conducted. Villages representing a wide range of population size were chosen. The only non-sampled villages were those whose inhabitants were refugees. There was no reason to ask questions which dealt with comparisons of life at Lwawu in 1985 with the past because these people recently moved from either Zaire or Angola. In addition, Angolan refugees were understandably suspicious of outsiders because UNITA is active across the border and Angolans do not want their precise whereabouts to become known to the soldiers. All interviews were conducted in the afternoon between 1300 and 1600 hours, the time when most people were present in their villages. Once it was determined that people were willing to answer questions the interviewee(s), translator, and myself sat on short locally made wooden stools in a shaded area of the village compound. All interviews were conducted with either the village headman or a male spokesman of authority in village affairs. Women were reluctant to talk directly with me when I was accompanied by my translator (a local male 19 years of age). Several interviews were conducted in English. All English speaking interviewees were males in their twenties or thirties. If interviewees were too young to remember aspects of the past they were asked to relate sentiments of their elders in the village. Villages where interviews were conducted were from the Lwawu or Mwinilunga area and interviewees were familiar with conditions of the area in the past.

When recording responses answered by only one spokesman, biases may result as one person's opinion may not necessarily be that of other village members. Responses to questions were cross-checked to make sure they represented views of the entire village by frequently asking the interviewee if his opinions were the same as other village members. Additionally, my translator and expatriates living at Lwawu all agreed that one spokesman per village would be adequate. It also became apparent that interviewees were insulted if other village members were consulted to confirm responses. It was assumed that data collected in this manner were reliable.

The purpose of the interviewing was only to gain knowledge of the perceptions and attitudes from the people who were directly affected by development inputs. In formulating questions an attempt was made to avoid personal matters and not to force anyone to judge people in power (i.e. government officials or missionaries). There would be little reason for people to lie. In addition, the Lunda of Lwawu seem to freely discuss issues with anyone who will listen (Pritchett 1985). There is no reason to doubt the validity of responses to my questions. In all, interviews were conducted at 17 villages representing 119 adults.

Other surveys and interviews:

An additional survey was administered to 31 adult women to determine the number of pregnancies they have had and the number of their children still living. This would provide data indicating fertility and mortality characteristics. Again, a purposive sample was used. Interviews were conducted with the assistance of a Zambian nun living at the Mission who spoke Lunda. All women who were willing to talk with us freely answered the questions. Women who did not wish to answer questions stated that similar questions had already been asked at their village during the census survey and interview and they therefore did not see any reason to repeat what had already been told.

Data about the Health Centre situated at Lwawu Mission were also obtained. Interviews with Health Centre personnel were conducted to determine major health problems and other related matters present in the area. In addition, randomly chosen health records of individuals were reviewed to gather data about how often they used the centre and how often they have had the most prevalent disease of the area, which is malaria.

An important source of information about the area was garnered from personnel of the Mission (2 males from the USA and 4 Zambian females from the Copperbelt), an American researcher from Harvard University living on Matonchi, an elderly Zambian male who lives near the Mission, and an elderly English female who lived on Matonchi from 1921-1950. Formal interviews were conducted at Lwawu Mission with each of these people, except with the

English woman who was interviewed in England in August, 1985.

During the past five years the UN has financed and trained local people in fish farming. Because fish have the potential to become an important resource for Lwawu area people, data were collected about the fish farms. An interview was conducted with a Zambian male (not originally from the Lwawu area) who is 'fish scout'. It is his job to assist fish farmers in developing and managing their ponds properly. In addition, many fish farms were observed and informal discussions made with several fish farmers.

Quantitative analysis:

Two tools were used for this thesis to analyze and present data obtained at Lwawu. The Michigan Interactive Data Analysis System (MIDAS) is a software system for data manipulation and statistical analysis (Fox and Guire 1976). MIDAS is available on the mainframe computer system (MTS) at the University of Alberta. Cross-tabulations, Student's T-tests, confidence intervals, and other inferential and descriptive measures were produced for this thesis using MIDAS. INTERGRAPH, a computer graphics hardware system available in the Department of Geography, was used to produce all figures displayed in this thesis.

V. SPATIAL DISTRIBUTION OF SETTLEMENTS AND MOBILITY OF PEOPLE

An important part of geographical study of a rural system is inquiry into the spatial organization and mobility patterns of the target population. This chapter focusses on these aspects. For Lwawu, the conceptual framework upon which research was based is represented by the diagram on the following page. Several components in this conceptual framework were proposed on the basis of geographical theories. Other components only became apparent after observation in the study area. Both theoretically and observationally derived components are discussed in the following section of this chapter; they were used to form for hypotheses related to spatial distribution of settlements and population mobility. Data are analyzed leading to confirmation or rejection of the hypotheses. Only part of the conceptual framework of Lwawu is discussed in this chapter: However, the framework is the basis for all data analysis for this thesis. Other parts of the framework are discussed in subsequent chapters and all components of the system are integrated in the concluding chapters of the thesis.

A. Derivation of Conceptual Framework.

Lwawu Mission has become the major centre of attraction and services for indigenous people of the area since 1955. Services situated at or near the Mission are listed in Chapter III. These services and other development inputs have resulted in changes to the spatial distribution of settlements and mobility of people in the area. Several theories may be used to explain what these changes were and why they occurred.

Before the colonial period there were very few centres of services for rural Zambians. During colonial rule the major efforts of the government and/or expatriates were geared towards administrative expediency or religious conversion of indigenous people (Siddle 1970). Most service centres were created as a direct product of these objectives. Lwawu Mission was no exception. The major purpose of the Franciscans after arrival in the Lwawu area in 1955 was evangelization. This still is the overall goal of the Mission. What is important is the fact that (1) in 1955 when the Franciscans arrived, the area around the present location of Lwawu

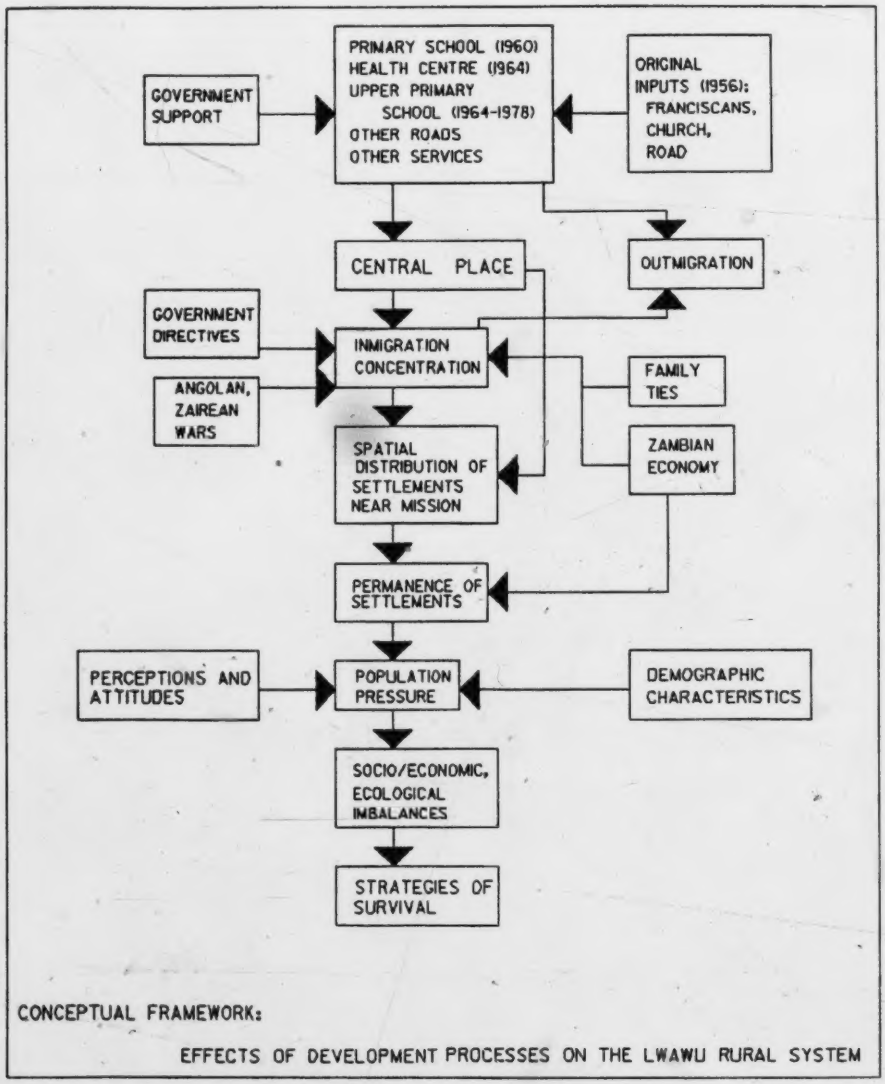

Figure V.1 The conceptual framework upon which this thesis is based.

Mission was almost uninhabited and (2) there were no formal plans for development programmes beyond the general goal of helping the indigenous population by whatever means possible. Nevertheless, activities undertaken by the missionaries may be seen as the first modern developmental inputs in the Lwawu area and they began only in 1955.

One of the reasons why the Franciscans located at Lwawu was because a road existed near Lwawu which connected the Paterson farm on Matonchi to Mwinilunga (Fouquette 1985). By the end of 1956 the Franciscans had built a 9 km road which accessed the Mission to the main Mwinilunga road (Cole 1985). This became the main artery assuring inhabitants of Lwawu access to services and commodities available from urban areas of Zambia. In 1958 a church was built at Lwawu which is still in use. The road and church thus were the initial inputs established by the missionaries. Other structures and services provided by the Mission or because of the presence of the Mission soon became focal points which attracted indigenous people to the area and influenced their mobility and location of their settlements.

The provision of services for people living in the area resulted in Lwawu Mission becoming a central place for the local population. Because of this, the Central Place Theory may be used as a basis for theoretical explanations concerning spatial distribution of settlements and mobility of people within and into the Lwawu area. One aspect of this theory which is applicable to a rural central place such as Lwawu is based on the assumption that both service providers and users act as optimizers (van den Berg 1983). Inherent in this assumption is the principle of least effort which implies that users prefer not to travel long distances to obtain goods and services and thus they will live in areas easily accessible to a central place. Jaeger (1982) adds support to this premise in a study which shows that since 1945 all villages near Kasempa in Northwest Province of Zambia have located along the main district roads and around small service centres. Because the area around Lwawu Mission was almost uninhabited in 1955, it may be assumed that the attractions of the Mission or related services there led to migration of people into the area. This inmigration has influenced many phenomena and can be examined using several migration and mobility theories.

Inmigration and mobility of people have played an important role influencing the rural system of Lwawu. As a general concept, mobility includes migrational and circulatory movement (Zelinsky 1971). Migration implies a permanent change of residence (Kosiński 1975) while circulation denotes a variety of movements usually short term or cyclical in nature with no declared intention of permanence (Zelinsky 1971). For the purposes of explaining theoretical relationships within the conceptual framework outlined at the beginning of this chapter, mobility is the term used here to describe both migration and circulation.

In a theoretical analysis of mobility patterns examination is needed ascertaining why people move. The decision to move involves a number of factors related to the area of origin, area of destination, intervening obstacles, and personal characteristics of the migrant (Lee 1970). Within any origin and destination are positive and negative factors which influence a final decision for a person to move. At the conceptual core of mobility behaviour is the notion of place utility. Place utility,

> ...refers to the net composite of utilities which are derived from the individual's integration at some position in space... place utility may be expressed as a positive or negative quantity, expressing respectively the individual's satisfaction or dissatisfaction with respect to that place (Wolpert 1970:301).

This encompasses both perceived and actual factors. The individual will tend to locate at a place where it is perceived that a greater utility exists than where he is now or in other potential destinations. Major stimuli which influence decisions to move are classified by Pryor (1975) into two categories resulting in autogenic or voluntary and allogenic or involuntary mobility.

Autogenic factors include:

1. Economic. This is often viewed as the primary cause of migration . People move either to gain cash income for personal needs or to live in a place with prospects and potential to move upward in occupational or social status.

2. Institutional or political. These include stimuli usually initiated by government policy aimed at specific goals such as developing centralized settlement schemes or enhancing marketing infrastructure.

3. Sociocultural. Factors categorized under this heading include the attraction of services such

as medical or educational facilities to migrants from deprived areas. In addition, migrants may be expected or required to move because of cultural tradition or to link up with kin.

4. Other behavioural or idiosyncratic. These cover a variety of complex personal motivations which focus on the personalities of individuals who move.

Allogenic factors include:

1. Institutional and political. Government policies forcing people to move fall in this category. Also included are refugees moving because of war or economic hardship.

2. Environmental. Easily identified hazards such as flood, drought, earthquake, and other natural phenomena often force people to move. Less catastrophic hazards such as soil depletion or deforestation also influence mobility patterns.

Whatever the contributing factors motivating mobility, migrational flows are viewed by many theorists as occurring within a hierarchical structure. According to them, stepwise migration exists which indicates both a number of discrete levels and the location of origin regions within a hierarchical arrangement (Harvey and Riddell 1975). This arrangement defines the direction and strength of migrational flows. Regions in the lowest levels of hierarchy are origins of a majority of migrants who move to the next highest level of settlement which, in turn, will be a source of migrants for the next highest level, and so on. Settlements in each level progressively have more services and ammenities to offer people who live there. These may be perceived or actual attractions such as employment opportunities, educational facilities, or health care. Theoretically, at the highest level of hierarchy is the primate city of the specified region, usually the biggest and most politically important city of a country. Before relating these theories to hypotheses used in this chapter, a brief survey of the Lunda people is necessary.

The Lunda of Lwawu, who as a subgroup are referred to as Ndembu, originally were part of the empire of the Lunda of Mwata Yamvo in what is now southern Zaire (McCulloch 1951). The Ndembu under the original Kanongesha appear to have migrated south to the Mwinilunga area in the mid 1600s (Turner 1957). Until the late 1800s no major migrations by Ndembu occurred and they existed as traditional shifting cultivators. People lived in small

settlements with a low level of economic production. Villages were not permanently anchored to any specific tract of land but moved across the region with relative freedom. Ndembu cultivation was classified as North Kalahari Contact System and their staple crop was cassava. Village relocation was dependent on the system of cultivation of this root crop. Generally, cassava was harvested during the 3rd and 4th years after sowing and after four to six years fields were abandoned as the soil became infertile and villages were then moved to new locations (McCulloch 1951). A steady (but small-scale) pattern of regional mobility was a traditional cultural characteristic of the Ndembu. The mobility of Ndembu accelerated, however, during the late 1800s due to increased slave-trading and slave-raiding. Other periods of increased mobility occurred in the early 1900s when the British South Africa Company commenced administration of Mwinilunga District. This was because of the harshness of early administration and imposition of taxation which resulted in mass migrations of Ndembu into the Belgian Congo and Angola (Turner 1957). Other than the migrations caused by these external forces, mobility of the Ndembu throughout this century was affected more by the presence of European outposts and government policies on a continuing, evolving basis rather than by any one input imposed on the area. This meant that villages, by 1950, tended to be located along motor roads, near Missions or hospitals, or administrative centres. In addition, government policy was instituted which induced men to build their dwellings out of Kimberly brick rather than traditional pole and mud. This resulted in more permanent habitations which obviously led to people remaining in one site longer or indefinitely. One result of more permanent settlements was that instead of moving villages to new cassava fields when they no longer could produce sufficient yields, people remained in one area but moved their fields farther and farther away from their villages. Overall, conclusions drawn from the limited amount of literature about the Ndembu are that while traditionally a mobile people within the region, indigenous people increasingly became, throughout this century, more sedentary and when relocating they tended to build new villages near structures or accesses to facilities tied to modern economies, technologies, and European lifestyles.

B. Hypotheses Justification.

Three hypotheses were formulated related to the topic of this chapter. Each will again be stated and then justified.

Hypothesis No. 1: **As the Lwawu area developed, rural-rural migration and circulation within and to the area and rural-urban migration and circulation away from the area increased amongst indigenous residents.**

Because of the presence of services and facilities at or near Lwawu Mission, it was assumed the area's place utility increased. Joined with factors motivating people to move, it was hypothesized that these influences would result in an influx of rural-rural migrants into the area. Once located near the Mission, facilities such as schools and a health centre enabled people to acquire skills or attributes contributing to increasing their propensity to migrate to urban areas. Thus, rural-urban migration would also be expected to have increased in the area since establishment of the Mission. Circulation was expected to increase simply because it was assumed that communication and transportation links have increased continuously since the 1950s thus making it easier for people to learn about other areas of the country and move back and forth between Lwawu and these points.

Hypothesis No. 2:**Most settlements in the Lwawu area are distributed spatially near service centres or accesses to them.**

This hypothesis was derived from elements of Central Place Theory. People in Lwawu were expected to locate their villages near services so they could receive their benefits with the least amount of effort. Additionally, studies suggest the Ndembu people and other groups in Zambia have increasingly settled near service centres over the past 50 years.

Hypothesis No. 3:**Settlements in the Lwawu Mission area are more permanent now than in the past.**

Literature indicates that government policies in general throughout Zambia encourage people to live more permanently in their villages. Although this is contrary to traditional Ndembu culture, it enables services to be provided easier to the people by the government. The basis for

this hypothesis, however, was derived primarily from observation after arrival in Lwawu. The presence of dwellings in the area made of Kimberly brick and such elements as hedges, large banana trees, and decorated walls all suggested to me a sense of permanence of habitation. The degree of permanence is important but even more so are the impacts permanent habitation has upon the ecology of the area. This hypothesis, therefore, has broad implications beyond ascertaining permanence of residents in the Lwawu area.

C. Patterns of Mobility Over Time.

Rural-rural migration:

Figures V.2-V.7 illustrate movement within and into the Lwawu area since the Mission was established. Presented are the dates when a village moved to its 1985 location and a generalized indication of where it moved from and the reason why it moved. The dates a village moved were not obtainable from all people so not every village is represented. However, 49 out of the 55 enumerated villages are shown.

All surveyed people who moved their settlements during 1955-1964 (Figure V.3) relocated along Mission road which conforms to Christaller's transport principle of Central Place Theory. Directives by the Chief were stated as reasons to move in three cases. Missionaries at Lwawu confirmed that the national government has conveyed to Zambia's Chiefs the desire to have their villages located near accesses whereby the government can provide services to people. Other examples of reasons to move included the two villages listed as 'PP' whose spokesmen stated that when they lived north of the Lwawu River, they had continuous difficulty maintaining a bridge over the river. Thus, they moved across to the main road.

During the years 1965-1975 (Figure V.4) there were only limited rural-rural migrations into the area. People in the three villages that moved along Mission Road all quickly responded to the question 'Why did you move to your present location?' by stating they wanted to be near

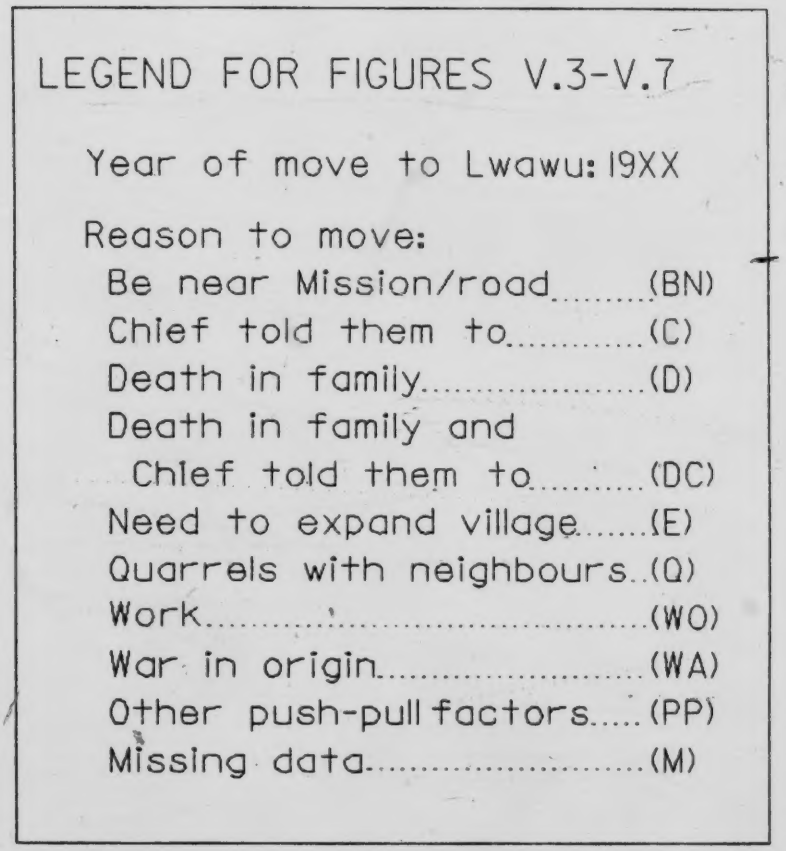

Figure V.2 The legend for maps on figures V.3-V.7.

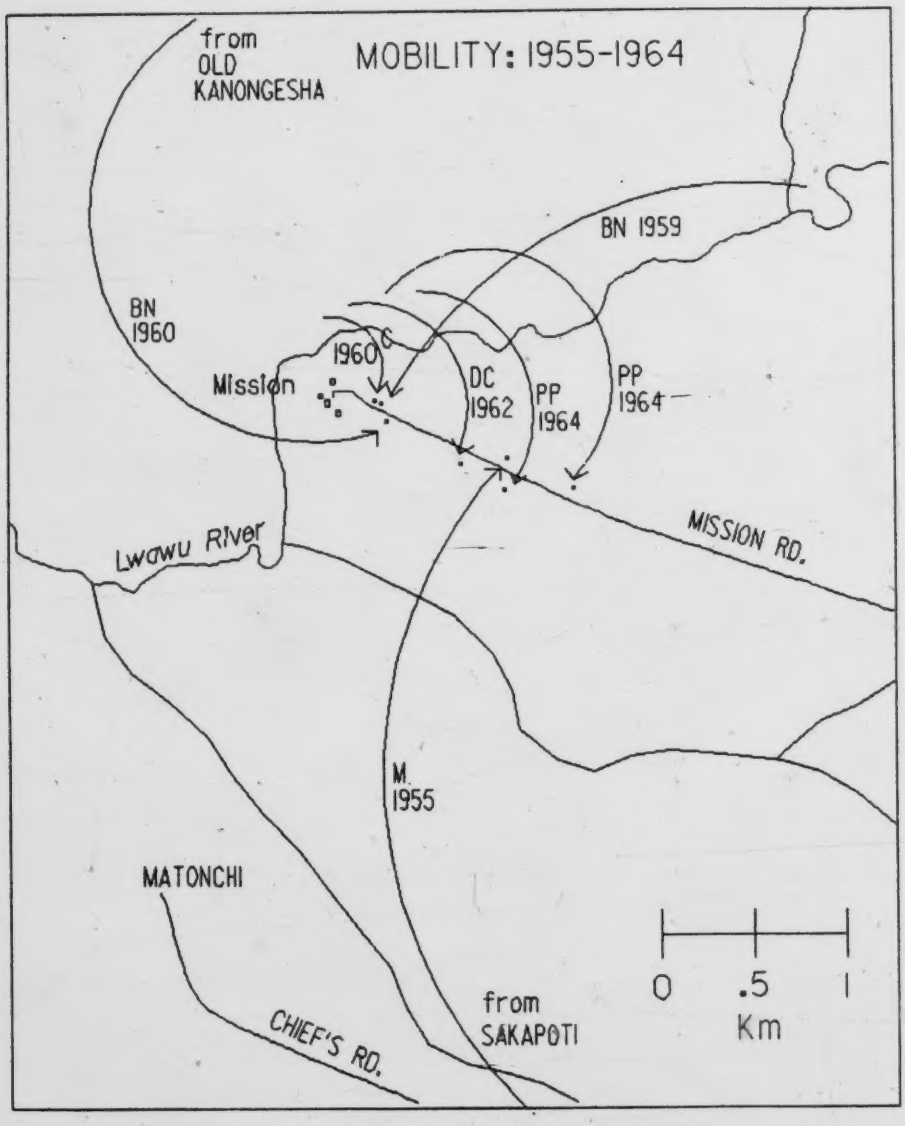

Figure V.3 Lwawu 1955-1964: The date a village moved, the previous location, and the reason it moved.

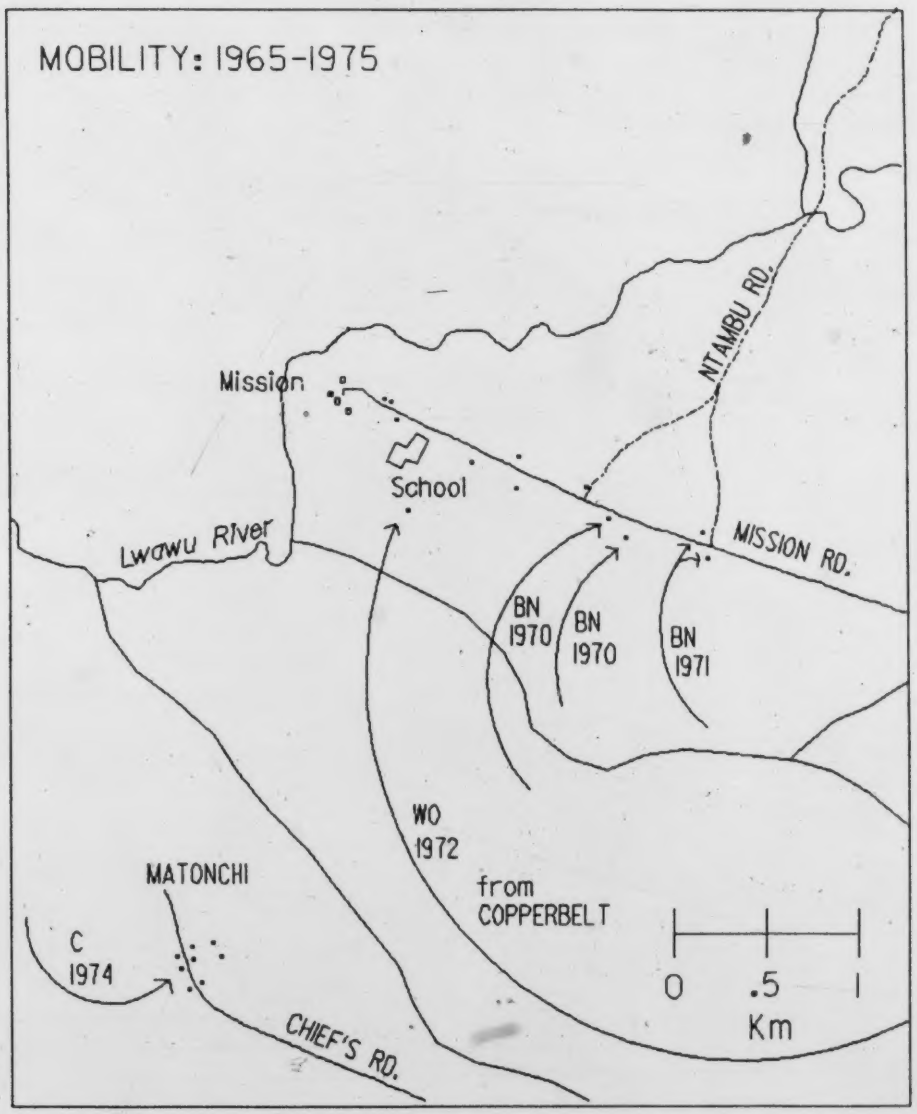

Figure V.4 Lwawu 1965-1975: The date a village moved, the previous location, and the reason it moved.

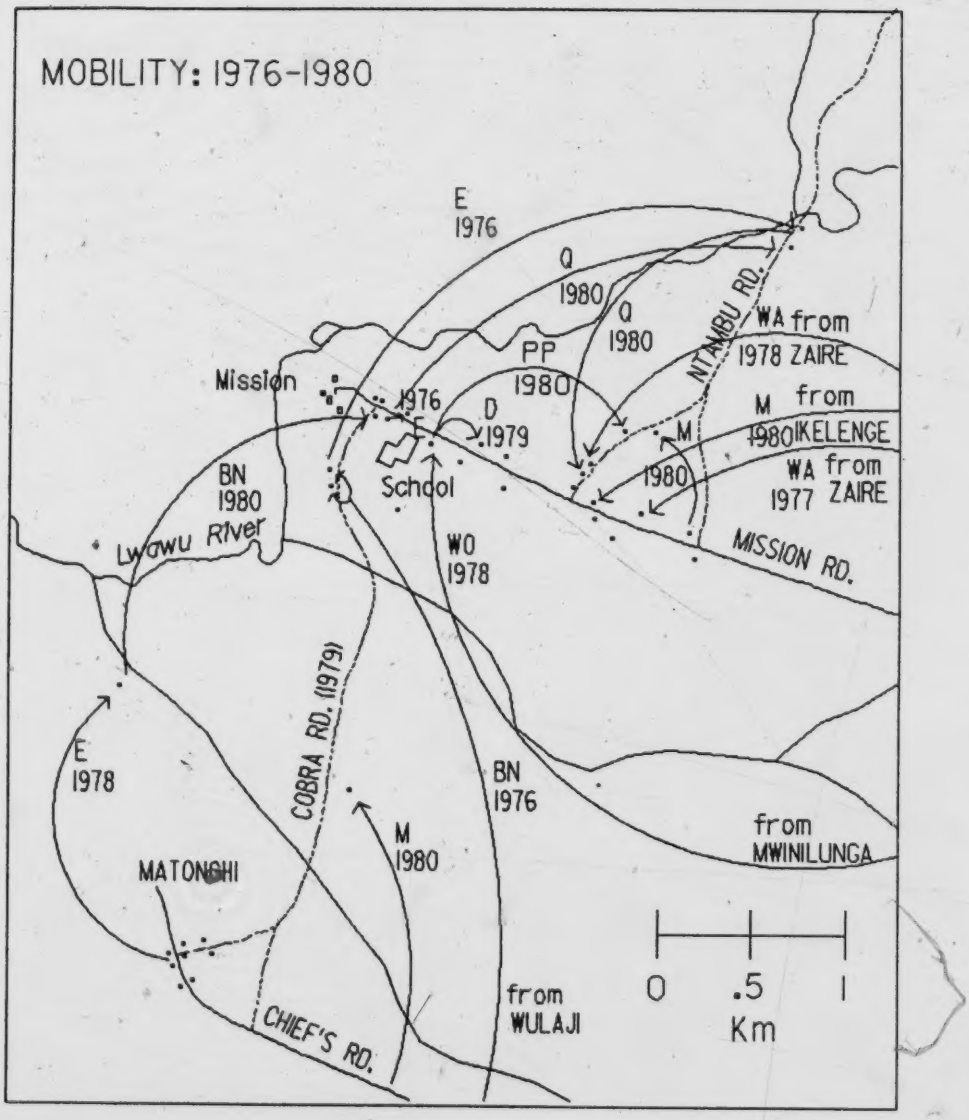

Figure V.5 Lwawu 1976-1980: The date a village moved, the previous location, and the reason it moved.

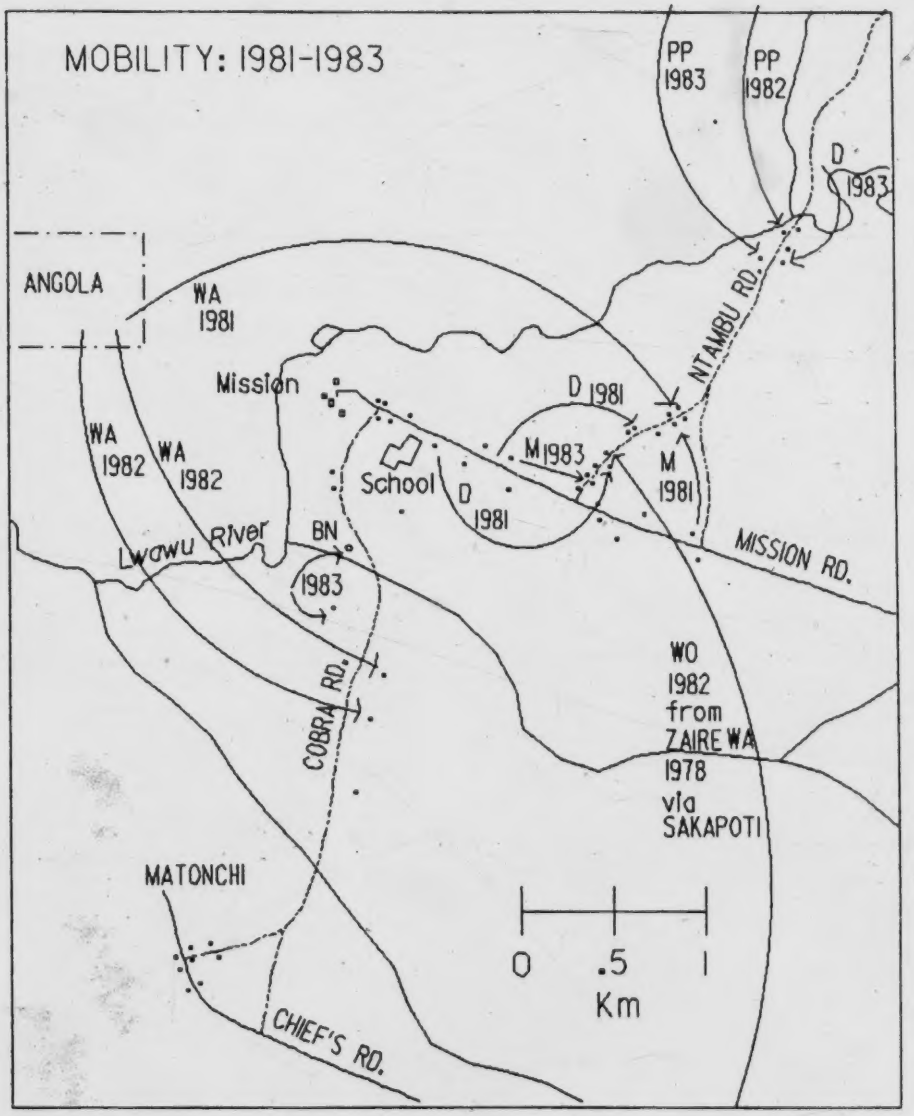

Figure V.6 Lwawu 1981-1983: The date a village moved, the previous location, and the reason it moved.

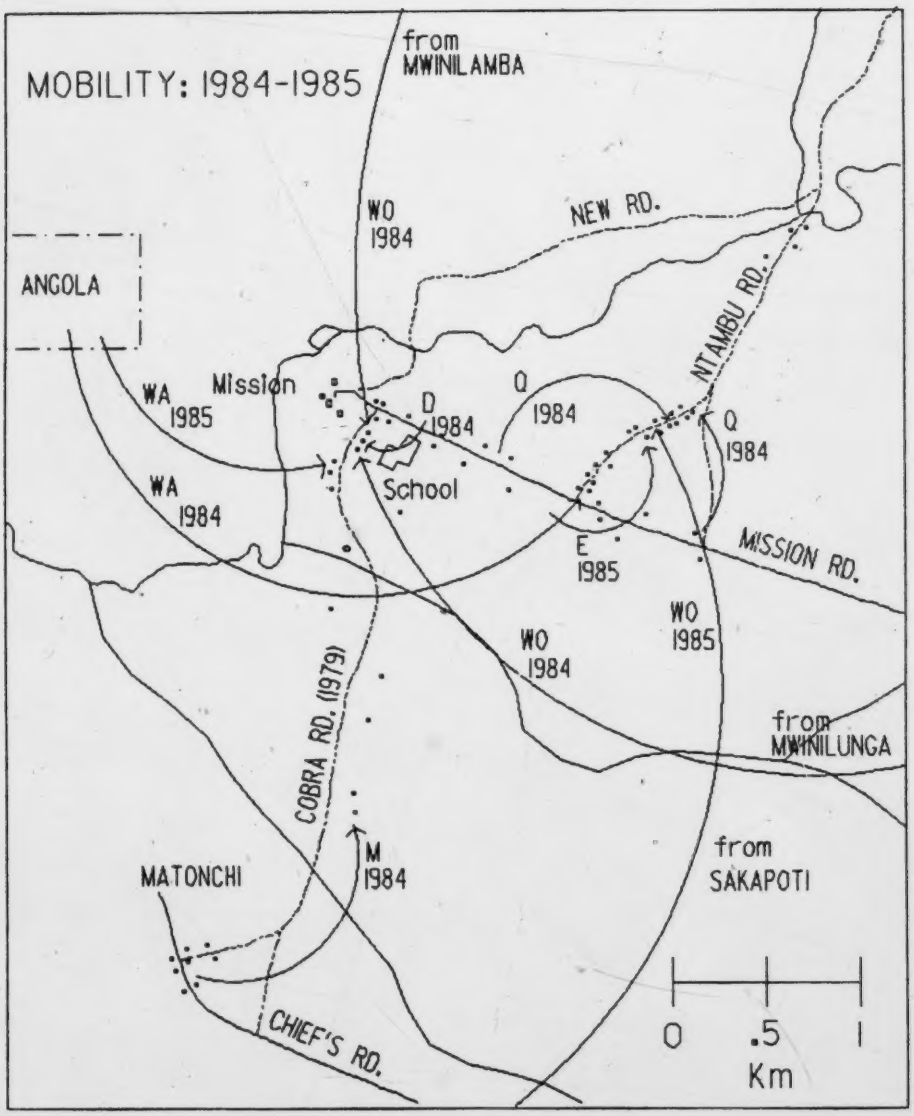

Figure V.7 Lwawu 1984-1985: The date a village moved, the previous location, and the reason it moved.

the road. A spokesman for the habitations near Matonchi specifically stated they moved because the Chief wanted them to get village grouping so the provision of services would be easier. During the period of 1966-1975 St. Kizito Upper Primary School was at its peak enrolment. It is unknown if the influx of boarders to the school had any influence on inmigration into the area near the Mission. Additionally, studies suggest during the period of 1964-1975 most migration throughout Zambia was oriented towards urban areas (Jaeger 1980).

Mobility during 1976-1980 (Figure V.5) increased substantially into and within Lwawu. Additionally, many reasons were given for moving. These range from a 'lack of neighbourly cooperation' (labelled as quarrels on the map) to the Katanga crisis where guerilla warfare in Southern Zaire forced residents to flee, (labelled as war). Habitations during this time started to appear along Ntambu Road which previously had very few settlements along it. The presence of several people who moved because of work indicates the importance of the Lwawu area as a source of income and employment opportunities.

The striking characteristic of the 1981-1983 period (Figure V.6) was that no new villages located along Mission Road. Indications suggested that Mission Road did not have more space for additional villages. Cobra Road, built in 1979, and Ntambu Road were the destinations for all migrants surveyed who moved from 1981-1983. An important aspect having effects on the area in 1985 and potentially in the future was the influx of Angolan refugees. What is important to note, related to spatial distribution, is the indication that previously uninhabited roads were gradually becoming more attractive for newcomers.

Again, during 1984-1985 (Figure V.7) movement centres on Ntambu and Cobra Roads. Other than Angolan refugees, reasons to move included employment opportunities and a need to expand to a place offerring more room to live and grow crops. In addition, stated reasons to move (listed as quarrels) included 'my grandsons were drunk and made trouble so we were told to leave' and (this was conveyed by my translator who knew the people), 'they are drunks and got kicked out'. Are these reasons to move examples of problems created by population pressures causing social tension? This question will be discussed after all data are presented.

Table V.1 lists factors to migrate in autogenic and allogenic terms. The largest proportion of representative [1] total population (38%) gave sociocultural factors as a reason to move. Only 8% of representative total population gave purely economic (work) reasons to move into the Lwawu area. This contradicts some traditional theories which state that people migrate primarily for economic reasons (Todaro 1976). Even though expansion to obtain more land to grow food crops could be viewed as economic rather than sociocultural, it is nevertheless apparent from these data that there are many variables contributing to rural Lwawu residents' mobility. Many recent theoretical statements concerning migration have criticized traditional economic models and emphasize the need to consider a variety of factors in explaining reasons to move (Lattes 1984). Regardless of why people move, the Lwawu area has had steadily increasing amounts of rural-rural migration into the area since the Mission was established in 1955 (Figure V.8). I expect that this migration into the area will continue in the future, to the point where there will be too many people for the land and services at Lwawu to support. In addition, I expect that the road labelled 'New Road' (Figure III.1) will receive many new villages in the future. Data discussed in this section are summarized in table V.2.

Rural-rural circulation:

Although rural-rural circulation is often associated with labour interchanges between different modes of production (Chapman and Prothero 1985), this approach was inapplicable to people in Lwawu. The only evidence of rural-rural circulation was the occurance of daily or short-term moves for purposes of cultivating, gathering, or hunting. Fields for commercial and subsistence crops were spread over a large area throughout Lwawu which made it necessary to commute regularly between village and field. It was extremely difficult to establish precisely who owned what field and where they were. My observations indicated that fields were located anywhere from adjacent to settlements to around 10 km away. The Harvard researcher who had lived amongst the Lunda for over a year told me that people generally cannot convey precise

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[1]The term 'representative responses' are explained in chapter IV.

Table V.1 Autogenic and allogenic factors of mobility in surveyed villages.

	The number of people living in surveyed villages	Proportion of the total number of people
Autogenic factors:		
Economic (WO)	49	8%
Institutional or Political (DC,C)	153	23%
Sociocultural (D,BN,E)	246	38%
Other Behavioural or Idiosyncratic (Q,PP)	61	9%
Allogenic factors:		
Institutional or Political (WA)	142	22%
Total	651	100

Source: 1985 Lwawu interview survey and census survey (L. Weissling)

Table V.2 Summary of patterns of mobility by period of migration, reasons to move, and previous location.

	Number of villages	Percentage of total number of villages
Period of Migration:		
1955-1964	7	14
1965-1975	5	10
1976-1980	15	31
1981-1983	12	25
1984-1985	10	20
Total	49	100
Reasons to move:		
Be near mission/road	8	16
Chief told them to	2	4
Death in family and chief told them to	1	2
Death in family	5	10
Need to expand village	4	8
Quarrels with neighbours	4	8
Work	6	12
War in origin	7	14
Other push-pull factors	5	10
Missing data	7	14
Total	49	98 (round off error)
Previous location:		
Lwawu	30	61
Other parts of Zambia	12	25
Zaire	2	4
Angola	5	10
Total	49	100

Source: 1985 Lwawu interview survey and census survey (L. Weissling)

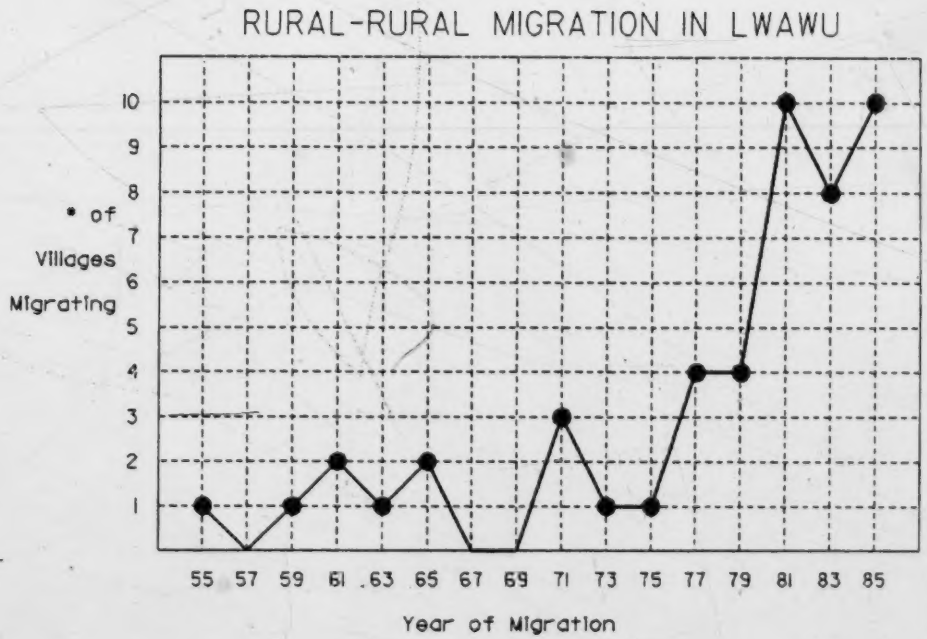

Figure V.8 The number of villages and the year that they moved to or within Lwawu.

locations of their fields in terms of distance away from their village or size of the fields (Pritchett 1985). Yet, everyone seemed to know exactly where each individual's fields were located. It is therefore difficult to define the amount of actual circulation by indigenous residents for purposes of cultivation. In addition to tending fields, gathering firewood is also a chore necessary to perform several times a week and involves commuting significant distances. Many people, especially women, commented that firewood was distant from settlements. My translator estimated that usually people must walk at least 4 km to find proper wood to make fires.

During my stay in Lwawu there was a constant daily stream of people walking past the main Mission house to fields and bush north of the Lwawu river. Data were collected one day from 0830-1800 hours to ascertain how many people walked past the Mission and how many returned and with what they returned. A total of 21 female adults and 14 male adults travelled to fields and bush during the time observations were made. Children also accompanied adults but were not included in the survey. Table V.3 summarizes how many returned and what they were carrying. This represents only a small fraction of total daily travel routes and cannot necessarily be used to represent the proportional amounts of daily circulation that occurs amongst all villages.

A form of rural-rural circulation that covers more distance relates to hunting. This activity was traditionally an extremely important cultural activity of the Lunda (Turner 1957). By 1985 most, if not all, game had been killed off (except an occasional individual animal which strays into settled areas) and if people want to hunt they must cross the border into Angola where game is relatively plentiful. Many people interviewed indicated they frequently (once a month to 4 times a year) walk into Angola to hunt or fish. There is also barter trade between Angolans and Zambians. Generally, Zambians supply maize meal or commodities such as sugar in return for Angolan dried fish or wild meat. Traversing the border is dangerous as UNITA soldiers often capture Zambian residents as recruits for guerilla warfare or, in the case of women, as cooks or sexual partners. Two instances of kidnapping occurred during research.

Table V.3 The number of people returning from fields and their load, for one day.

Item which people returned with:	Number of females returning	Number of males returning
Crops:	10	2
Cooking firewood:	7	3
Brewing firewood:	2	0
Construction planks:	0	1
Charcoal:	0	1
Nothing:	2	7
	21	14

Source: Personal notes (L. Weissling)

All people captured subsequently escaped or were freed within 3 weeks.

Overall, it appeared that rural-rural circulation has increased since establishment of Lwawu Mission primarily because people find it necessary to travel farther and farther to find necessities of daily life. Coupled with this is the fact that this type of circulation increasingly takes longer as these necessities become harder to find. For whatever reasons, I expect all forms of rural-rural circulation are expected to continue or increase in the future.

Rural-urban migration:

A large amount of literature exists analyzing and discussing rural-urban migration and its effects, particularly on the destination area. This is especially important in Zambia which has had massive increases in urban population due to rural-urban migration during the last few decades (Mwanza 1979). Northwest Province has not had as extensive a rate of out-migration as other parts of Zambia (Johnson 1980a). Indeed, it has been ascertained in this chapter that the Lwawu area has experienced a massive influx of migrants since 1975. There was not a great increase, however, in the number of villages at Lwawu between 1965 and 1975. Because of difficulty in obtaining detailed family histories in the time available for field research, data were not adequate to make conclusions concerning the *number* of rural-urban outmigrants from Lwawu since 1955. It may be assumed that if one made an effort to move to Lwawu rather than another destination he would be expected to settle in Lwawu at least for awhile. Therefore, the focus of rural-urban migration research in the field concentrated not so much on numbers of outmigration as on the evaluation of attitudes towards urban areas to measure propensities to future migrations. Data were gathered concerning specific amounts of rural-urban migration from interviewed village representatives although there is not enough information to make definite conclusions concerning the size of this type of migration for the general population of the area.

Outmigration from Lwawu:

Amongst the 17 villages where interviews were conducted, 6 or 44% have had more than 1 village member move to an urban area and 2 or 15% have had 1 member move. It should be noted that data include an elderly man who lived in the Copperbelt 27 years and a young man who attended school in the Copperbelt for 5 years. Both have recently returned to their origin village to live. In all, 21 people have moved away from 8 different villages with a total adult population of 70. Sixteen males moved to work in their destination, three males attend or attended school, and two females moved away because they got married. Twelve moved to the Copperbelt, 5 to Mwinilunga, 2 to Lusaka, and one each to Chingola and a rural area east of Mwinilunga. Five villages have had no member move away and the remainder, for various reasons, could not provide applicable data concerning rural-urban migration. These reasons included one village whose members who moved from a town (Mwinilunga) to the area, three villages with recently arrived members previously from Mwinilamba and Zaire, and an elderly couple with no children. Migrants from the other villages generally were young and male. It is often suggested that rural-urban migrants are usually young and well educated males (FAO 1984). Rural areas are left with a male population poorly educated which is too young or too old and villages lack a sufficient labour force to cope with agriculture production. when these factors were studied in Lwawu it was found that a virtually even distribution existed amongst villages surveyed. Half of the surveyed villages consisted of over 50% of their members having had some education and also included over 50% of their members as being males between the ages of 15 and 30. Forty-four percent of villages have an adequate amount of farm labour, according to their spokesmen. In addition, inquiry was made concerning remittances from urban village members, a theoretically important source of income for rural areas (Simmons 1984). In Lwawu, people in only 3 villages indicated they received any remittances from members in urban centres. (Granted, many people would not want this fact known to others and may not have been completely truthful because they feared being robbed.) Thus, amongst people interviewed, rural-urban migration from Lwawu does not appear to have major effects upon remaining rural residents. Data were inadequate, however, to make any generalizations

about outmigration from the Lwawu population as a whole. Adequate data exist, however, to indicate numbers of outmigration amongst St. Kizito Upper Primary School graduates originating in the Kanongesha area and attitudes residents had towards urban areas at the time of interview.

Outmigration amongst St. Kizito graduates from the Kanongesha area:

A total of 77 boys from the Kanongesha area attended St. Kizito Upper Primary school during its years of operation from 1964-1978. All but 13 are no longer in Kanongesha which means that 64 or 83% have migrated away from their origin. Data were obtained on the 1984 place of residence of 24 graduates who were originally from Kanongesha (Figure V.9). One place of residence, Kapapemba, could not be located. Only 2 of these men were unemployed in 1984. Correspondence with several St. Kizito graduates indicated that all of them would not have moved out of the area if they had not been educated. It is apparent that a high quality education in Lwawu increased the propensity of graduates to migrate out of the area. This is especially true when jobs were relatively plentiful for educated men during the late 1960s and early 1970s. It is unknown whether this outmigration of young educated males affected the rural system of Lwawu.

Attitudes towards urban areas:

Throughout field research it was obvious that most people in the Lwawu area were aware of forces, factors, and conditions of national economic and societal affairs. This was confirmed by the missionaries and Harvard researcher at Lwawu. The objective for the study of attitudes towards urban areas was to ascertain whether urban centres were a lure for people and how they may influence future propensities to migrate. Are 'city lights' attractive to people or are people consciously opting to remain in rural areas because of negative aspects of current urban Zambian life? The later point of this question is an increasingly common aspect of rural African attitudes: "potential migrants, faced with the overcrowding of the urban labour markets, [are] ceasing to regard migration as viable proposition..." (van Binsbergen and Meilink 1978:11). Some questions asked of people in Lwawu related to this problem. The

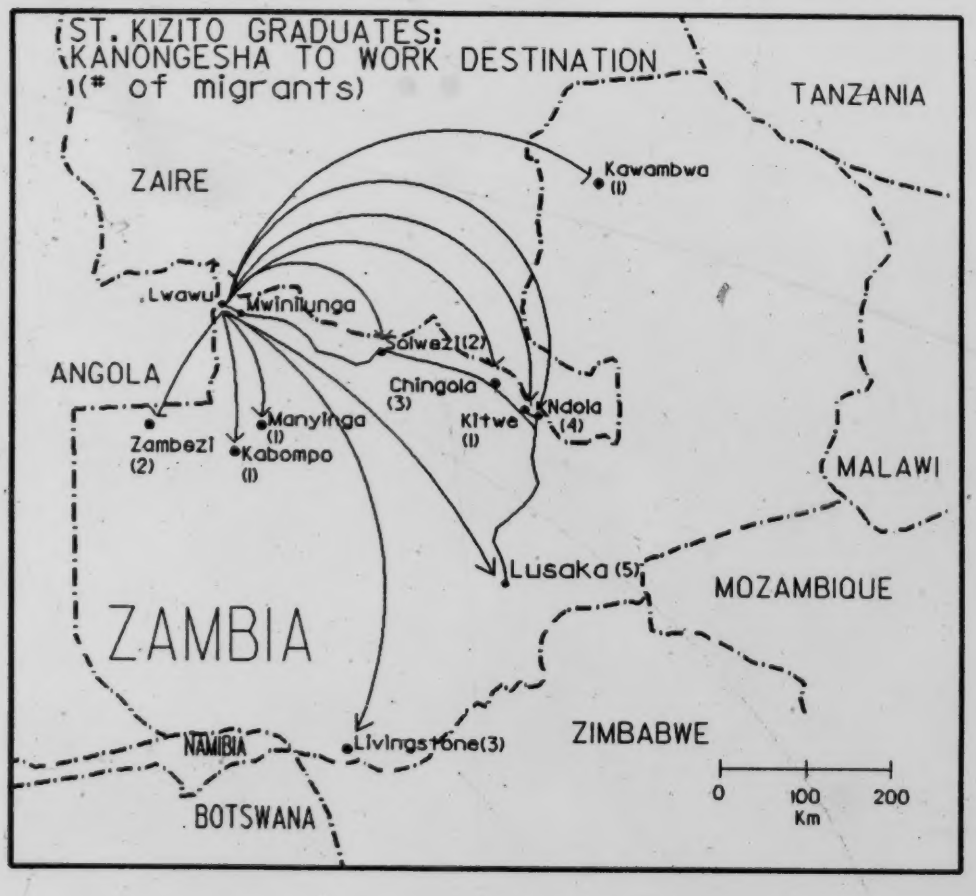

Figure V.9 The 1984 locations of males from Kanongesha who graduated from St. Kizito School.

following are the questions, responses, and number of responses.

1. Do you think people in town earn more money than rural people?

   n=60 Yes: 38 (63%) No: 9 (15%) Don't know: 13 (22%)

2. Do you think there are more job opportunities in town than here?

   n=83 Yes: 20 (24%) No: 63 (76%)

3. If you were to move to town now do you think you would obtain a job?

   n=71 Yes: 5 (7%) No: 66 (93%)

4. Where would you prefer to live, here or in town?

   n=116 Here: 101 (87%) Town: 15 (13%)

People did not view urban areas as an attractive alternative to living in Lwawu. The only people indicating a desire to move elsewhere were a few young men of 18-21 years, but this is no different from attitudes of men this age all over the world. The awareness people have towards urban conditions is also noteworthy and becomes apparent when review is made of specific likes and dislikes people have about cities (Table V.4). While most view the availability of commodities as positive factors of urban life, threats to themselves such as crime were given as examples of negative aspects. Newspaper articles and discussion with urban residents of Zambia confirm that crime is a major problem and fact of life in all towns and cities of the country. Regardless of the reasons, it may be concluded that residents of Lwawu do not necessarily view urban areas as desirable destinations of migration.

In conclusion concerning this topic, it cannot be ascertained whether rural-urban migration increased amongst the general population of Lwawu since 1955. However, propensity to migrate seems to have increased amongst residents who graduated from St. Kizito school. Finally, data indicate that urban areas as destinations for permanent migration were not attractive for indigenous residents of the Lwawu area. I would not expect that any significant rural-urban migration will occur in the near future.

Table V.4 The likes and dislikes of urban areas according to Lwawu residents.

	The number of times each factor was mentioned by the spokesman in 17 interviewed villages
Likes:	
Availability of money	3
Availability of clothes	2
More commodities	3
Employment	1
Transport	1
More things to do	2
New things to see	1
Music	1
Total	14
Dislikes:	
High prices	2
Accidents	1
Thieves, crime	4
Difficult to move around	1
Total	8

Source: 1985 Lwawu interview survey (L. Weissling)

Rural-urban circulation:

Among surveyed villages, 14 or 93% had at least one member who had been to an urban area of Zambia, mainly the Copperbelt. A total of 29 people had visited there and were from villages with a 1985 adult population of 111. Twenty six people stated they travelled to visit relatives in the city. Of the other three, two went to the Copperbelt to work for one to three years in the early 1960s and one went to Lusaka and attended school for one year in the early 1980s. Eleven people periodically journeyed to the Copperbelt to visit kin anywhere from once a year to every three years and stayed from one month to four or five months. These circulations have been occurring throughout the 1970s and 1980s. There was no indication that the desire to make visits to the Copperbelt would decrease in the future and I expect that this type of rural-urban circulation will continue. Although a specific cause and effect relation cannot be determined, rural-urban circulation has most likely increased during the last 30 years as transport and income have become more available to rural residents and more acquaintances and kin (not necessarily from Lwawu) live in urban areas. A point must be made concerning this, however. While conducting research in Zambia in 1985 a severe nationwide fuel shortage developed reportedly due to Zambia's lack of foreign currency to buy oil. Bus service to and from Mwinilunga and the Copperbelt, the primary, if not only, method of transportation of Lwawu residents to the Copperbelt, was either cancelled or unreliable. It is unknown whether this affected decisions of people to travel although these disruptions probably will continue in the future and travel will become more difficult for the rural Zambian. Nevertheless, the most important conclusion drawn from this topic is that most people in Lwawu have experience and knowledge personally or from a family member of what city life is like and the conditions existing in urban areas.

Rural-urban circulation amongst St. Kizito students:

Due to the large numbers of students attending St. Kizito School from all parts of Zambia and the length of time the school was an important fixture in Lwawu, the relation of the school's students to rural-urban circulation cannot be ignored. A total of 244 boys from

outside the Kanongesha region attended St. Kizito School between 1964 and 1978. All would have boarded at Lwawu Mission for the 3 years of schooling except for holidays which were three months per year. The origin of each student and the number of students from each origin are shown on figures V.10-V.12. Four students' origins could not be located on any map. These maps illustrate the nationwide infusion of boys 12-13 years old who temporarily became part of the human system of Lwawu. Data were not collected specifically relating how these circulations affected the land or people of Lwawu. Nevertheless, is may be assumed that a dispersion of ideas and knowledge of other areas of Zambia occurred as these boys resided in the Lwawu area. This, perhaps, is the most important aspect of this type of rural-urban circulation upon people of Lwawu.

In review of data concerning all forms of mobility in Lwawu, hypothesis No. 1 can only partially be confirmed. Rural-rural migration has increased since 1955 and is expected to continue. Rural-rural circulation appears to have increased and is expected to continue. Rural-urban migration has occurred since 1955 although evidence is lacking to indicate whether it increased. In 1985, rural-urban migration was not a significant phenomenon amongst Lwawu residents. It is not expected to occur in any great amount in the future. Finally, rural-urban circulation has existed since 1955 and, amongst current residents, is expected to continue as long as transport is available. Furthermore, it may be assumed that because of communication and transport links, people living in Lwawu have become aware of the economic and societal characteristics throughout most regions of Zambia. The conclusion related to hypothesis No. 1 is as follows: The size of rural-rural migration and circulation and rural-urban circulation have increased since 1955; these movements are expected to continue in significant amounts. Rural-urban migration has occurred in Lwawu since 1955 but is not importans in 1985 and is not expected to be a significant factor in the future.

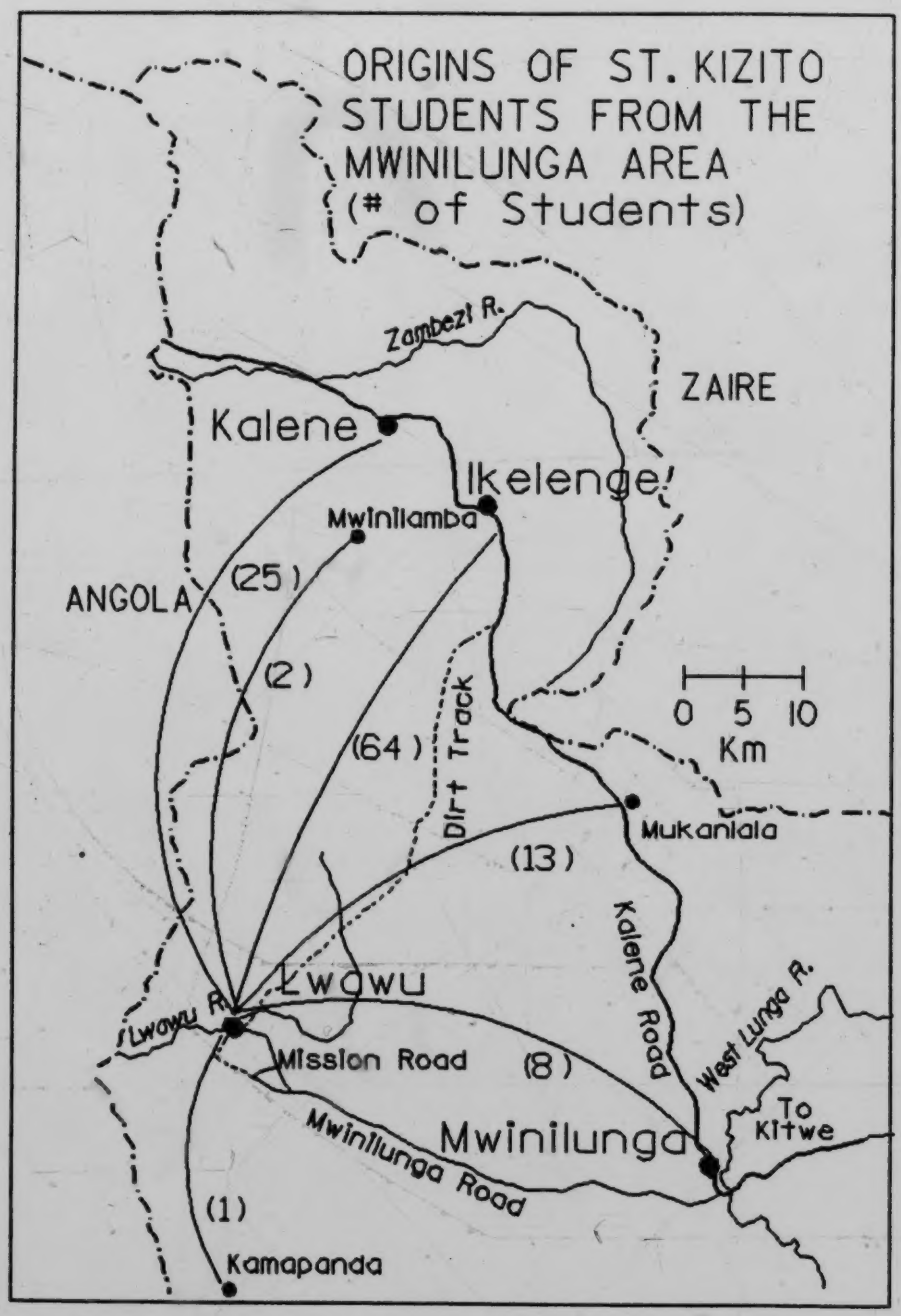

Figure V.10 The origins of students who attended St. Kizito School and came from the Mwinilunga area.

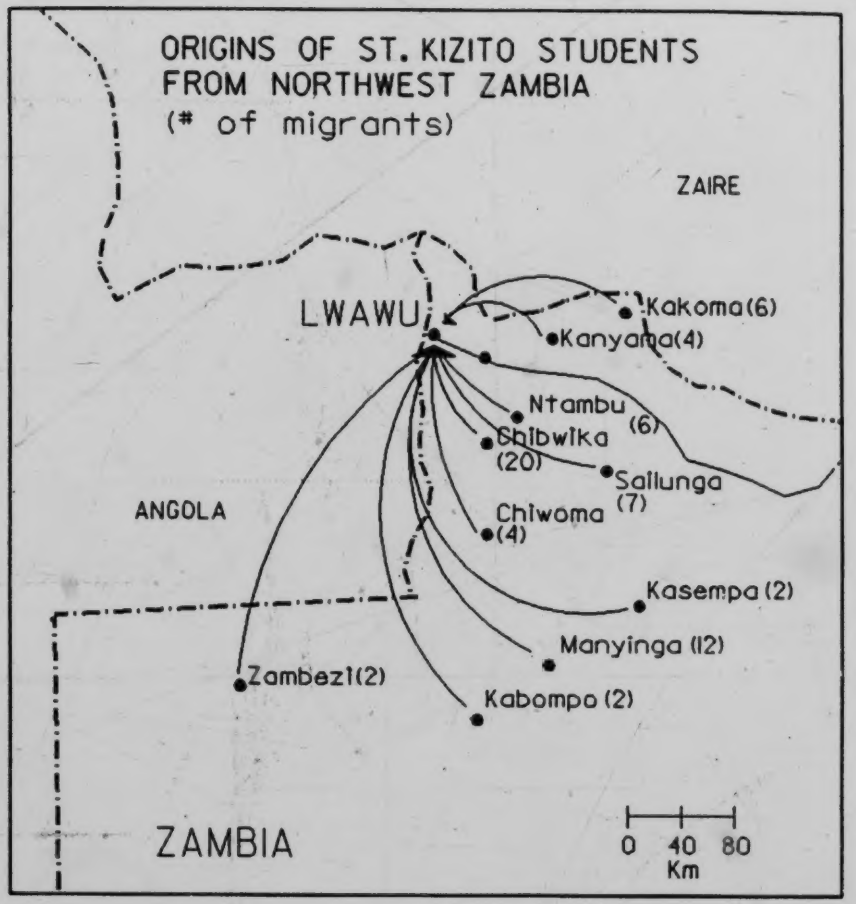

Figure V.11 The origins of students who attended St. Kizito School and came from northwest Zambia.

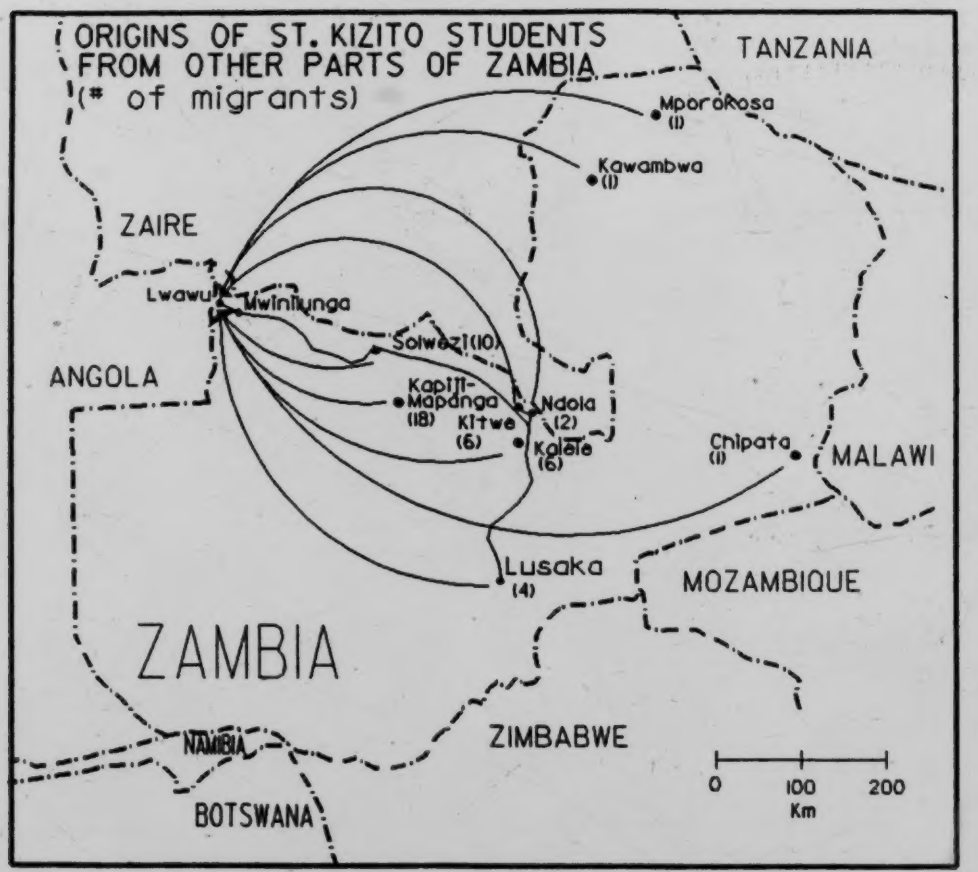

Figure V.12 The origins of students who attended St. Kizito School and came from other parts of Zambia.

D. Spatial Distribution of Villages in Lwawu.

The most effective tool illustrating spatial distributions of settlements is the map. When Lwawu of 1985 (Figure III.1) is compared to figures V.3-V.7 illustrating mobility it is clear that Lwawu settlements have been built near service centres or accesses to them since 1955. Figure III.1 includes all villages in the study area. Only one village was not within close proximity to a motor road or the Mission. Nearest neighbour analysis confirms this observation. For all villages within the study area ($24km^2$), $R = .475$. The critical value at $alpha = .01$ is .872 . Thus, the null hypothesis that villages are randomly distributed is rejected. Statistically, villages in the Lwawu study area are clustered. Hypothesis No. 2 is confirmed.

E. Permanence of Settlement in Lwawu.

To ascertain whether people intend to live permanently at their present location, the question was asked 'How long do you intend to live at this location?'. All interviewees, representing 119 adults responded 'permanently'. Two spokesmen intend to relocate their villages within 500 metres of their present location. Therefore, the responses to the question may be viewed as unanimous. Reasons why people intend to live at Lwawu permanently were not asked specifically as the answers, in the people's viewpoints, were obvious. These were that Chief Kanongesha wants more control over his people and therefore wants them to live in a centralized area and, more importantly, because the Mission provides so many services it would be foolish to move anywhere else. Pritchett (1985) has concluded that many indigenous people in the area view the Mission as existing to provide them with cheap goods. People will get what they can while they can and as long as the Mission is a source of services they will continue living there. It was obvious that the Mission would not let anyone in the area unnecessarily suffer because of a lack of commodities or services which the Mission could provide. Therefore, people have every intention of living near the Mission or within its influences indefinitely. Hypothesis No. 3 has been confirmed.

F. Conclusion.

Findings based on data analyzed in this chapter are the following.

1. After an initial influx of rural-rural migrants from 1955-1964, Lwawu experienced limited inmigration from 1964-1975.
2. From 1975-1985 Lwawu experienced a substantial influx of migrants . Included were many refugees from Angola. It is expected that the area will continue to attract rural-rural migrants.
3. People gave many reasons why they moved to or within Lwawu. Only 8% of the total population surveyed moved purely for economic reasons.
4. Rural-rural circulation appeared a function of villages' proximities to firewood, fields, and hunting grounds. Because these are becoming more difficult to find, rural-rural circulation is expected to increase and become more time consuming.
5. Rural-urban migration from Lwawu occurred throughout the 1960s and 1970s especially by St. Kizito Upper Primary School graduates. Since high unemployment, a poor national economy, and other negative aspects of urban life became a continuous problem in Zambia during the 1970s, rural-urban migration has decreased and people said they prefer to stay in Lwawu. It is not expected that rural-urban migration will occur in any significant numbers in the near future.
6. Rural-urban circulation has been a part of life for most Lwawu villagers since the 1960s. People travel to urban areas primarily to visit kin. The most important aspect of this is that most, if not all, Lwawu residents have an awareness of aspects of other parts of Zambia. It is expected that rural-urban circulation will continue as long as transport is available.
7. All villages in the Lwawu area, with one exception, were clustered near the Mission and roads leading to it.
8. All spokesmen indicated the intention that their villages and village members remain in the area permanently.

All components in the conceptual framework of the Lwawu rural system up to and including 'permanence of settlements' are directly related to the above findings. The original inputs, with government support, have evolved and grown into a diverse offerring of services and facilities for indigenous residents. Lwawu Mission has become a central place. Because of its attractiveness as a provider of services, goods, and commodities, the place utility of the Mission is high. This has led to an influx of migrants who view the area as a positive choice of destination. Until the late 1970s the Mission also provided the means by which people could obtain skills and knowledge needed to become part of the urban work force. This was possible primarily because of the upper primary school run by the missionaries. Since the school closed, outmigration has not been an important component of the system.

People have not moved to the Lwawu area solely because of the attractiveness of the Mission. Government directives have played a large role in persuading (or forcing?) people to move to places where government services could easily be provided. The irony is that the poor economy and lack of proper management and infrastructure has often resulted in government services being inadequate. Thus, the Mission often fills the gap and becomes the primary motivator of migration into the area. Family ties also influence whether people move to Lwawu although only in one case was this the primary motive. Wars in Angola and Zaire were and are factors pushing people from their origin. However, there are many other areas where these people could have located, especially Zairois. This again suggests the high place utility of Lwawu. Although it is difficult to ascertain precisely the role of national economic conditions upon the mobility patterns in the Lwawu area their impact undoubtedly exists. Lwawu area residents are tied to and aware of national economic conditions. Because of this and other reasons, most of them have decided that Lwawu is more desirable than urban areas as a place to live. This has led both to people moving into Lwawu and their intention to reside there permanently. The Mission can lessen the negative effects of the national economy by its connections to North American and European aid. Once in Lwawu, people locate their villages along access routes to the Mission apparently to minimize the effort needed to obtain and use

services provided by the Mission. Consequently the geographic characteristics of settlement patterns in the area are that they are clustered near the Mission and accesses to it and are more or less permanently located.

Taking all components discussed above into account, there seems to be no doubt that Lwawu may be viewed as an area placed in a relatively high level of settlement hierarchy. At the time of its founding the Mission was in the lowest level. Since then is has attained and provided more services and ammenities and has become a destination, not an origin, of migrants. Especially in 1985, when people indicated urban areas were not desirable destinations, Lwawu has essentially become an area amongst the highest levels of the stepwise progression of settlement functions. With this in mind, discussion is made in the following chapters about the demographic characteristics of the Lwawu population and people's attitudes and perceptions toward development indicators.

VI. DEMOGRAPHIC CHARACTERISTICS OF LWAWU RESIDENTS

This chapter provides information about demographic characteristics of residents who live in Lwawu, differences in population between 1985 and the past, and the attitudes people have towards pertinent aspects of their own demographic trends. These are related to several components of the conceptual framework outlined in Chapter V, one of which is labelled 'inmigration and concentration'. This component is included here because it is necessary to describe the population characteristics of the people migrating into and within the Lwawu area before making inferences relating these characteristics to other components. In addition, given that there has been an increase in numbers of migrants and, subsequently, settlements are more permanent, it follows that attempts should be made to ascertain whether there is also an increase in actual numbers of people in the area resulting from factors other than inmigration. If there was an increase, how has this specifically led to population pressures within the rural system? Discussion of these elements of the Lwawu system are included in this and subsequent chapters.

Descriptive and inferential statistics are used to analyze some data related to this chapter. Theories, especially parts of the demographic transition theory, along with studies done in the area are applied to evaluating the data. Three important parts of demographic transition theory are bases of conclusions and/or analyses in this chapter. The first part is concerned with general *descriptions* of demographic characteristics over time. Secondly, *explanations* are attempted concerning the causal mechanisms which created the pattern of change described in the first part. Finally, *predictions* are made as to the likely future demographic outcomes (Woods 1979). In addition to the demographic transition theory, demographic concepts and characteristics outlined in relation to development processes are useful for data analysis and conclusions. These are discussed shortly. First, though, explanation must be given why certain demographic methods cannot be used.

Two major problems limited standard demographic analysis in Lwawu. The first problem concerned the lack of adequate background information and records about the people

in the area. The second problem is related to the short time in which research had to be conducted in the field. Many references exist explaining why censuses, usually a primary source of demographic data, in Africa are rife with inaccuracies, contain data of limited quality, and are often outdated (Kpedekpo 1982). While useful as an overview, published censuses obtained about Zambia and Mwinilunga District did not provide enough quantifiable information to be used extensively or as a primary source of information about Lwawu. In addition, descriptions of fertility and mortality are almost impossible to analyze in relation to Lwawu because no records were found on births and deaths of residents there. Detailed family histories would have been needed to obtain adequate amounts of data concerning fertility and mortality, but time constraints made this impossible. Nevertheless, enough data are available from other sources to make conjectures describing, explaining, and predicting demographic trends and characteristics.

In keeping with an overall purpose of this thesis, regardless of what the actual demographics in Lwawu are, the attitudes people have towards various population characteristics are an important measure in relating elements of the Lwawu rural system to the conceptual framework presented in Chapter V. Analysis of these attitudes is a key ingredient leading to conclusions made in this chapter. In addition, hypothesis No. 4 was formulated before gathering data related to demographics: **Development did not alter attitudes concerning what is an ideal family size amongst indigenous residents of Lwawu.** This hypothesis was based on several theories linking rural development and fertility.

Traditional societies in Africa historically have had high fertility and high mortality rates. Since World War II and the advent of modern medical treatment and facilities as well as various measures related to public hygiene, many developing nations have experienced declines in mortality. While fewer deaths are occurring births remain high and population growth is proceeding at an enormous pace (Stolnitz 1970). Theoretically, societies should experience lower population growth rates as they make a transition into a more modern era. Generally, it is thought that as economic growth and development occur in a rural area a set of processes are

activated leading to improved living conditions and modernization of a rural population. Accompanying these processes are factors such as a decreased need for labour and an increase in the costs (education, clothing, etc.) to support family members (Nag 1984). What results is that a growing proportion of parents will increasingly have a desire for fewer and fewer children (Kocher 1973). It has not (and perhaps cannot) be determined what the time frames are for these changes in attitude to occur. The question concerning people in Lwawu was whether development in the area has contributed to changes in people's attitudes towards ideal family size. After a few days in Lwawu, my personal observations and discussion with the missionaries made it apparent that there were more children in the area than in the past. This led to formulation of hypothesis No. 4. The most important objective was to discover exceptions to majority viewpoints associated with this hypothesis. Were there any households in Lwawu who had different attitudes towards ideal family size compared to other people living there? If so, what were their backgrounds and personal characteristics? In this way it was hoped that trends would emerge indicating that development in Lwawu was indeed starting to change some people's attitudes.

All data analysis in this chapter leads to conclusions and/or conjectures related to the last two parts of demographic transition theory stated previously. To facilitate making explanations and predictions, findings are classified according to demographic consequences of development projects as outlined by Kosiński (1985):

1. Expected or not.

2. Direct or indirect.

3. Long or short-term.

4. Lasting or transitory.

5. Local-regional-national-international.

6. Types of impact-
--size and density of population
--fertility and mortality
--characteristics/structure of population
--migration.

It is hoped that by organizing findings into these classifications the demographic transition theory may be used for the study of population geography without the need to extensively analyze fertility and mortality figures. Types of impact are discussed and classified within the following section of this chapter. The remaining classifications are discussed in the conclusion.

A. Size, Distributions, and Densities of the Lwawu Population.

Information regarding the structure of the Lwawu population was gathered by conducting a census survey of villages in the area. With the assistance of a translator, greetings were extended to a village member and he was asked to answer a few questions. Most people readily agreed and they were asked to state the numbers of adult males, adult females, and children living in their village. [2] In all, 55 villages were enumerated out of 75. Many families in villages were polygamous. No attempt was made to gather information about the number of wives a male had as polygamy is frowned upon by the missionaries and this information was considered an invasion of privacy. Subsequent parts of this section will describe the size of population per village, the distributions of people within and between villages, and population densities.

Size of population per village:

The population of all 55 enumerated villages consisted of 159 adult males, 212 adult females, and 449 children for a total population of 820. The total population per village ranged from one male adult to 60 people consisting of 12 male adults, 17 female adults, and 31 children. Descriptive measures of village population are listed in table VI.1. Classification of villages was based on the adult male to adult female ratio of each village with the exception of villages without any children. Villages with no children consisted of single adults or elderly adults who were childless or whose children had moved away. Nuclear family was defined as a household consisting of one female adult and one male adult with a child or children. The most

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[2]Refer to Chap. IV for definitions of village and adult.

Table VI.1 Enumerated villages classified according to adult male/female ratios and their size and population structure.

Type of village:	The number of villages enumerated	The number of adults in village	The number of children in village	Total village population
No children	5	8	0	8
Nuclear family	9	18	34	52
One male adult; >1 female adults	8	28	31	59
Even number of adult males, females	4	30	47	77
More adult males than females	7	62	76	138
Male/female adult ratio >1:1 but <1:2	13	145	166	311
Male/female adult ratio ≥1:2	9	80	95	175
Total	55	371	449	820

Type of village:	The percentage of total enumerated population	The percentage of total number of villages	The adult/child ratio in each village type
No children	1	9	1:0
Nuclear family	6	16	1:1.89
One male adult; >1 female adults	7	15	1:1.05
Even number of adult males, females	9	7	1:1.59
More adult males than females	17	13	1:1.25
Male/female adult ratio >1:1 but <1:2	38	24	1:1.23
Male/female adult ratio ≥1:2	21	16	1:1.21

Source: 1985 Lwawu census survey (L. Weissling)

numerous type of village was characterized by a male to female ratio greater than 1:1 and less than 1:2. This type of village represented 24% of the total number of all villages and the total population of this type of village represented 38% of the total population of all villages. Villages with more than one adult female and male represented 60% of the total number of all villages and 86% of the total population of all villages. The total population of all 75 villages in the study area may be estimated based on number of people per living dwelling. To perform this, the number of living dwellings (98) in the twenty unenumerated villages was multiplied by the number of people per dwelling (3.76) from the 55 enumerated villages, resulting in 368. Thus, the total population of the study area was estimated at 1188.

Distributions and inferences amongst the sample population:

Data from each village were analyzed on MIDAS so that inferential statistics could be used to describe characteristics of the sample. Analytical variables were listed according to the number of male adults, female adults, children, total adults, and total population per village. All variables were not normally distributed. Skewness ranged from 1.03 for children to 1.894 for adult females with kurtosis ranging from 1.05 to 5.509 for the same variables. It was necessary to convert each variable to its logarithim which had a normal enough distribution to conduct parametric statistical tests. Conclusions drawn from these data are the same as if the raw data had been normally distributed (Hammond and McCullagh 1978). Student's T-tests were used to compare the mean number of males and females per village and also to compare the mean number of children and total number of adults per village. This analysis tested the claims that there were fewer males than females in the study area and that there were fewer children than total numbers of adults in the area. Comparing males to females, the null hypothesis ($u_1 = u_2$) is rejected (sig. = .00205). There is enough evidence to conclude there are fewer males in the study area than females. In fact, the ratio of males to females is 1:1.33. Comparing total number of children to total number of adults per village, the null hypothesis ($u_1 = u_2$) cannot be rejected (sig. = .7626). There is not enough evidence to conclude there are

fewer children than adults. It may be assumed there are more or equal numbers of children than adults in the study area.

Plates VI.1-VI.3 illustrate size and composition of the population living in each of the enumerated villages. Each graduated circle is directly proportional to the total number of residents of the village and segments within the circle are directly proportional to the number of male adults, female adults, and children in each village. A summary of proportions of children to total population in each village according to the classification of village type as defined in the previous section appears in Table VI.2. Among all enumerated villages with at least one child the proportion of children to total village population ranges from 21% to 75% with a mean of 54%. Student's T-tests were used to compare means of proportions of children with the means of each strata per type of village. In addition, the overall mean of proportion of children per village was compared between each of the means of each strata per type of village. No means were significantly different among any variable. In other words, there is no evidence that the proportion of children per total population were different between any village type (except, of course, villages without any children). There was also no significant difference between the proportion of children and the area from which a village originated. It may thus be inferred that there are no differences amongst any villages enumerated in terms of population size and proportions of children when compared with classifications of villages by male/female ratios and area of origin.

Size of population per village varied, however, depending on which road they were located. The mean number of total population per village was 21 on Cobra Rd. (SD=14), 18 on Mission Road (SD=9), and 9 on Ntambu Rd. (SD=7). Most people living on Ntambu and Cobra Roads had moved there since 1980 whereas those on Mission Rd. were long-time residents of the area (refer to figures V.2-V.7). Cobra Rd., with more space than Ntambu Rd., appeared to be the choice of destination for refugees, most of whom lived in large villages. Ntambu Rd., on the other hand, had many nuclear families or small families. Considering that Mission Rd. most likely does not have room for more villages, the trend appears to be for small

Table VI.2 The proportions of children per village classified by village adult male/female ratios.

Type of Village:	Minimum proportion of children per village	Maximum proportion of children per village	Mean proportion in all villages of that type
Nuclear family	25%	75%	60%
One male adult; >1 female adults	25%	73%	46%
Even number of adult males, females	50%	70%	60%
More adult males than females	33%	71%	52%
Male/female adult ratio >1:1 but <1:2	21%	69%	52%
Male/female adult ratio ≥1:2	40%	71%	52%

Source: 1985 Lwawu census survey (L. Weissling)

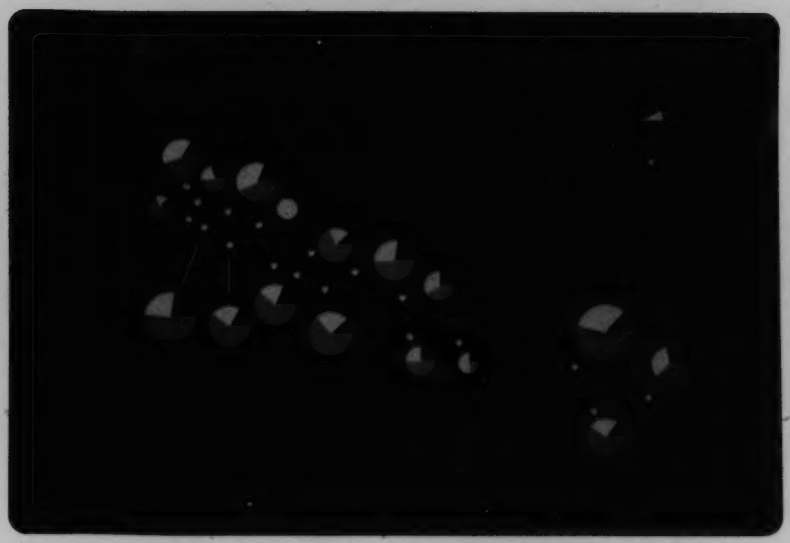

Plate VI.1 Total population of each village along Mission Road and their proportion of males, females, and children.

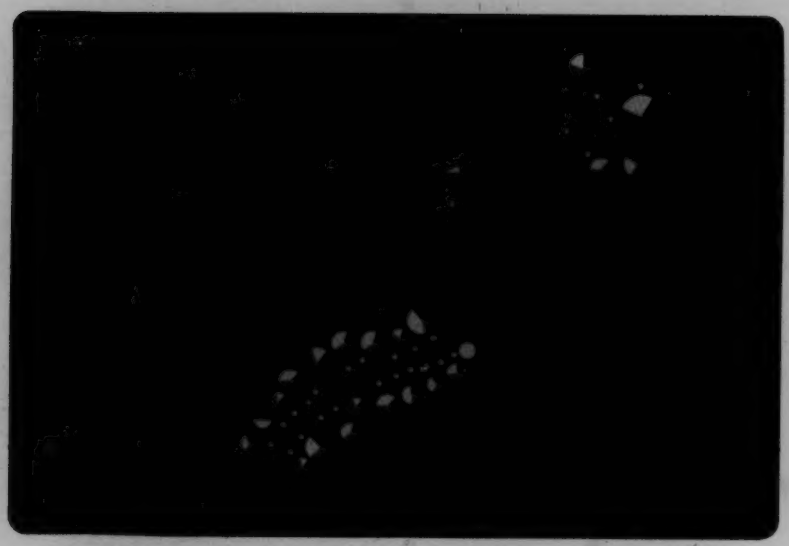

Plate VI.2 Total population of each village along Ntambu Road and their proportion of males, females, and children.

Plate VI.3 Total population of each village along Cobra Road and their proportion of males, females, and children.

families to cluster on Ntambu Rd. and larger families (especially refugees) to locate on Cobra Rd.

Population density:

Two densities may be described in discussion of population structure in Lwawu. One is people per dwelling and the other is people per area of living and working. The first density can be accurately computed using data from the census survey. Table VI.3 shows the number of dwellings in each village. Because these data are obviously not normally distributed, further statistical descriptions such as the setting of confidence intervals are inappropriate. Most villages were relatively small consisting of between one and six living dwellings. In all, 820 people lived in 218 dwellings or 3.76 people per hut.

Densities per area are more difficult to derive. Due to time and resource constraints, no accurate measurement was possible of the actual area in which people lived, which included their fields. Only estimates were possible. First, various areas of habitation may be computed. These encompass the area immediately surrounding villages and include land available for new villages to be built on. Another estimate may be based on individual garden plots located adjacent to rivers and streams usually near villages and where food for personal consumption is grown. Third, the area between Mission Road and the Chief's Road was full of cassava fields and may be included as living and working space near Lwawu Mission. Finally, cassava and maize fields were located several kilometres to the west and north of the Mission. Thus, a maximum area of living and working may be estimated. At the least, any density measurement will be low as in all likelihood there were more people using the area measured for agriculture than the number of people used to compute density. Using 1188 as the estimated total population of the study area the following densities were derived.

Table VI.3 The number of dwellings in each enumerated Lwawu village in 1985.

	The number of dwellings in each enumerated village:													
	1	2	3	4	5	6	7	8	9	10	...	17	Total	Mean	Stan dev.
The number of villages:	14	5	10	7	3	8	3	2	1	1	...	1	55	3.96	2.98
The percentage of the total number of villages:	25	9	18	13	5	15	5	4	2	2	...	2	100		

Source: 1985 Lwawu census survey (L. Weissling)

Area of habitation: 2.5 km²; Density: 475/km²

Area of individual garden plots: 2 km²; Density: 594/km²

Area of nearby fields, gardens, and habitation: 16 km²; Density: 74/km²

Total area including outlying fields: 50 km²; Density: 24/km²

A density of 24 people per km² is similar to densities of other population nuclei in Northwest Province (Johnson 1980a). The difference is that at the time (before 1978) these other densities were computed, Kanongesha had 12 people per km². In the article in which these statistics were presented mention is made of the "remarkable" population increases of settlements developing within a 10-20 km radius of mission sites offering health care and schooling. Even though densities at Lwawu are only rough estimates it is likely that the true density would be around 24 people per km². This is significant because Jaeger (1981) has suggested the critical population density for people living in Kasempa, Northwest Province, an area similar to Lwawu, was 9 people per km². He states that 1590 people could live in 177 km² (or a 7.5 km radius around a service centre) without substantial damage to the environment and with enough land to grow food to satisfy nutritional requirements. In Lwawu 1985 there were more people living in a smaller area than the numbers which Jaeger estimated as the critical density. I conclude that the results obtained seem to suggest that Lwawu has exceeded its critical population density.

B. Population Changes in Lwawu.

It has already been ascertained that there were more people in the Lwawu area in 1985 than in the past due to inmigration. The objective of this section is to determine whether other variables related to population changes would also indicate that there were increases in the number of people in the area. This includes comparison of proportions of adults and children per village and density of people per dwelling with data from the past. The primary reference used for this analysis is V.W. Turner's (1957) detailed anthropological study of the Ndembu conducted from 1950-1954. It is assumed his data are directly comparable to people of Lwawu even though his study area included large parts of Mwinilunga District. Secondary sources of

comparison incorporate government census data, the limitations of which have already been discussed. Data from Lwawu were gathered from the census survey and from a purposive sample of 31 women who were asked how many children they have had and how many of their children are still alive.

Comparison of Lwawu population data with Turner's data:

Turner's survey included a census of 30 villages. Among the villages surveyed there were 204 male adults, 249 female adults, and 194 children (Table VI.4). These results indicate that the proportion of adults and children amongst the samples have changed substantially since the 1950s. The proportion of adults per village has decreased by 25% while the proportion of children has similarly increased. Concerning population density per dwelling, Turner found that from a sample of 77 villages, the mean number of dwellings per village was 10.6. This compares with 3.96 dwellings per village in Lwawu. Turner's data show 87% of villages consisted of 17 or fewer dwellings while 85% of villages in Lwawu had 6 or fewer. There were fewer dwellings per village in Lwawu 1985 than amongst Turner's villages of the early 1950s. Furthermore, 640 people occupied 276 dwellings in Turner's survey or 2.32 people per dwelling. For Lwawu, 820 people lived in 218 dwellings for a density of 3.76 per dwelling. Turner does not specify densities per km^2 in small enough units of area to compare with Lwawu. However, he does mention that an agricultural officer calculated that in Mwinilunga District in the early 1950s, the critical population density lay between 7-12 people per km^2. The estimate for population density in Lwawu was 24/km^2, and there is reason to believe this is an underestimate. In comparing Lwawu data with Turner it may be stated that in 1985 proportions of adults in villages has decreased and children has increased. In addition, living dwellings per village has decreased and the density of people per living dwelling has increased.

Table VI.4 A comparison of the proportions of adults and children between data from Turner (1950s) and L. Weissling (1985).

	Data from Mwinilunga Dist. (1950s)	Data from Lwawu (1985)	The change in proportion from 1950s to 1985
The number of villages in each survey:	30	55	
Their total population:	647	820	
The number of adult males:	204	159	
The proportion of adult males:	32%	19%	-13%
The number of adult females:	249	212	
The proportion of adult females:	38%	26%	-12%
The proportion of adults:	70%	45%	-25%
The number of children:	194	449	
The proportion of children:	30%	55%	+25%

Sources: Turner (1957), 1985 Lwawu census survey (L. Weissling)

Changes in fertility:

Because of a lack of records about fertility and other measures of natural population increase the only data that may be used to measure fertility are adult female/ children ratios. Sources other than the village survey conducted at Lwawu provide information which is useful for this analysis. One source is Turner's study and the other is from the 1969 Zambian national census (Central Statistical Office 1975a,1975b). Table VI.5 lists figures comparing the female to child ratios between these sources. Data shown from censuses were for Mwinilunga District which encompasses 21120 km² and for Kanongesha North, an area undefined by census publications but which includes Lwawu. At best the validity and comparability of these data are limited to qualitative conjectures. However, all observations in the study area indicate that birth rates have increased in Lwawu which confirms inferences based on the data presented in the table. Further analyses of female to child ratios may be made about the 50 enumerated villages with children. The mean female to child ratio amongst the 50 villages was 1:2.47. When this is compared using T-tests with the mean ratios of villages according to their area of origin, in no case can the null hypothesis ($u_1 = u_2$) be rejected. When means are compared between villages according to their area of origin, one pair of origin groups is statistically different. These are villages whose origins are Lwawu and Angola. The mean ratio for Lwawu originating villages was 1:2.16 and for Angolan originating villages, 1:3.55. The level of significance is .031 and the null hypothesis ($u_1 = u_2$) is rejected. It may be assumed that Angolan villages have a higher female to child ratio than villages originating in Lwawu. Overall, there were more children per female in 1985 than in the past and there is evidence that Angolan originating villages have more children per female than Lwawu originating villages.

The women's survey also provided data on the number of live births each woman has had during her life and the number of children still living (Plate VI.4). Amongst all 31 women, 67% of their children were still living and 33% had died. For women over 40 years old (n=10), 50% were still living and 50% had died. Among women less than 40 (n=21) 78% were still living and 22% had died. Of course, the older a woman is the greater the chance that she may have

Table VI.5 A comparison of female:child ratios over time between various sources.

The source of data and area surveyed:	The number of female adults in survey	The number of children in survey	The ratio of F:C	The difference from 1985 Lwawu	The difference from 1950s Mwini. Dis
Field study 1950s Mwinilunga Dis.	249	194	1:0.78	-63%	0
Census 1969 Mwinilunga Dis.	15694	22478	1:1.42	-33%	+83%
Census 1969 Kanongesha N.	734	1179	1:1.60	-25%	+105%
Field study 1985 Lwawu	212	449	1:2.12	0	+172%

Sources: Central Statistical Office (1975a,1975b), Turner (1957), 1985 Lwawu census survey (L. Weissling)

Plate VI.4 Respondents of the women's survey, not all the children pictured are their own.

had a child who had died. On the other hand, nurses in the health centre all agreed that most deaths occur before a child is one year old and 3 out of 10 babies usually die. The results of the women's survey seem logical. There are too many other variables involved, however, to make any conclusions or conjectures based on this information.

C. Attitudes Towards Population Characteristics.

It has been shown that more people lived in Lwawu in 1985 than in the past but the outcomes which result from this population increase cannot be discussed before attitudes and perceptions people have towards population characteristics of Lwawu have been analyzed. The point, again, is that the success or failure of development inputs ultimately rest on how the target population views the processes related to development. If it is assumed that increases in the Lwawu population, whether from inmigration or natural increase, have resulted from developmental inputs initiated by or associated with the Mission, then attitudes people have towards population characteristics may be viewed as being a part of developmental processes affecting the entire rural system. Two questions relate to the objectives of this thesis. These are 'How do people in Lwawu view population processes in the area?' and 'Is there any indication that development inputs have contributed to changes in people's attitudes towards aspects of population?'. This section attempts to answer these questions and leads to discussion of outcomes of all demographic aspects of the Lwawu system.

Views towards population processes:

Interviewees in Lwawu were all asked 'Are there more people in the area now than in 1978? in 1964?'. The answers were unanimous. All think there are more people in the area. In fact, most people stated that there were too many people in the area. But therein lies an irony: a characteristic of the Lunda in Lwawu appeared to be that people recognize the existence of a problem but they usually place the blame for the problem on others and thus do not think they have an obligation to correct the situation. This characteristic presented itself numerous times

and has been observed by Mission personnel and the Harvard researcher. Because people indicated to me they think there are too many people in Lwawu, they were asked what they thought was the cause of this. Responses representing 73 people were that 52% think that refugees are the cause of too many people in the area. The remainder, 48%, think that having too many babies is the cause. It must be noted that, in the respondent's opinions, other people are the ones having too many babies. Obviously, there are more people in the area as a result of the influx of refugees. But do refugees have more children than others? Among the 55 villages enumerated, villages consisting of Angolan refugees have the highest mean number of children, 14.2. When this is analyzed further it becomes apparent that the largest village in the area, consisting of Angolan refugees, has 31 children which skews the data and results in a high standard deviation. When T-tests using logarithms are used, inferences are that there is not enough evidence to reject the null hypothesis ($u_1 = u_2$) between mean number of children from Angolan villages (14.2) and total mean number of children (8.2) and means of other Zambian (7) or Lwawu (7.7) originating villages. Thus, statistically, Angolan villages do not have a different number of children than other villages in the area. As previously discussed, though, Angolan originating villages have a higher female to child ratio than people originating in Lwawu so there could be a realistic basis for people's opinions. Regardless, it is useful to analyze variables showing characteristics of people who blame refugees for there being too many people in the area. It is easiest to discuss this by looking at the characteristics of people who said having too many babies is the cause of too many people. All respondents in the latter category came from villages where more than 50% of adult males are between 15 and 30 years old (18% who blamed refugees), where at least 25% of all adult members have had some formal education (45% who blamed refugees), and where people think they are more healthy in 1985 than in both 1978 and 1964 (42% who blamed refugees). Even if those stating babies as the cause still blame others for having too many babies, they nevertheless seem to link this variable with biologic, rational factors rather than blaming it on other specific but not necessarily realistic causes. It is apparent they are young and educated and most likely associate modern

development efforts such as a health centre with improved health suggesting they are aware of scientific processes as a root of many phenomena occurring in their environment. A conjecture may be made that people who are more educated and integrated with development inputs tend to have more realistic opinions concerning the causes of too many people. One further note about causes is appropriate. All people originating in Angola say having too many babies is the cause of the problem. However, 100% of those originating in other parts of Zambia blame refugees for too many people. Lwawu originating residents were evenly divided.

Views towards ideal numbers of children:

As a basis of this topic are responses elicited by asking each interviewee 'Do you want to have as many children as you can or is a certain number better?'. Out of 98 representative responses, 80% said they wanted as many children as they can or as many as God gives them. The remainder, 20%, gave a specific number of children as ideal. This 20% included one village of 3 male and 6 female adults who said the number of children they now have was enough. However, their village had 16 children, a rather large number when compared to other villages. The other people who wanted a limited number of children were from a village of 5 male and 6 female adults who said five or six children per family was ideal. In extending this reasoning, if each adult male in this village has at least five children then the ideal number of children for this village would be 25, again a relatively large number. They already had 11 children in their village. Nonetheless, their attitude indicates they realize children do not necessarily arrive by pure chance. Two male adults from this village worked for the Mission and were in close contact with Mission personnel. It is unknown whether this affected their attitude towards ideal family size. Pervasive amongst 31 women interviewed was the thought that only God can decide how many children to have. These observations lead to questions regarding development inputs in Lwawu directed to limiting population growth. Certainly the Catholic missionaries in the area do not condone or encourage artificial birth control. Their philosophy is that people will naturally limit the number of children they have when they decide not to have any more. The

only evidence that contraceptives were used amongst residents was gathered through casual conversation with young men who could speak English. They indicated condoms were obtainable surreptitiously from sources outside of the Lwawu area and were only used when involved with women other than their wives (which was not uncommon). Considering that those who wanted to limit the number of children in their family already have more children than the mean number of children in all villages, there is no indication that residents of Lwawu have any desire or intention of limiting the number of children they have to a number less than average in the area. Hypothesis No. 4 is confirmed. It may be expected that people in the area will continue to have as many children as they can. It cannot be stated that any trends were emerging which indicated development processes in Lwawu were starting to change people's attitudes. If a trend emerges in the future I expect it will likely be amongst young, educated people well integrated with development inputs.

D. Conclusion.

Findings from data discussed in this chapter are the following.

1. The total population of enumerated villages in the study area was 820. The estimated total population in the study area was close to 1200.
2. There were statistically fewer males than females in the study area. The overall ratio of males to females was 1:1.33.
3. There were an equal or greater number of children than adults. The overall proportion of children per village was 54%.
4. There was no significant difference between types of villages as defined previously and their area of origin in terms of proportions of children per village.
5. There were differences in sizes of villages in terms of total population between Cobra, Mission, and Ntambu roads. Cobra Road had the highest mean number of total population per village (21) and Ntambu Road the lowest (9).
6. The density of people per living dwelling was 3.76/dwelling.

7. The proportion of adults in 1985 Lwawu appeared to have decreased since the 1950s while the proportion of children increased based on comparison with V.W. Turner's data. Density of people per dwelling has also increased.
8. Fertility seems to have increased throughout the 1950s and 1960s based on female/child ratio comparison with censuses and Turner's data. The only difference in the ratio of female per child occurs between Angolan originating villages and Lwawu originating villages. Angolans statistically had a higher female to child ratio.
9. Residents interviewed in Lwawu all think there are too many people in the area.
10. Those who associated the cause of too many people by interpreting reasons for this in a biologic context tended to be young, educated, and appeared integrated with development inputs.
11. There was no indication that indigenous people in Lwawu have a desire or intention to limit the number of children they have to anything less than the average number of children per village already in the study area.

Explanations of these findings and prediction of future trends are based on Kosiński's classifications as outlined at the beginning of this chapter.

Expected or not:

Because the Franciscans had no specific goals in terms of development when they arrived in Lwawu, the consequences of demographic trends taking place amongst indigenous people as a result of the missionary presence may be viewed as not expected. During field research the missionaries had no quantified figures about demographic elements of the population whom they were serving beyond general observations such as that there were more people in the area and especially more children than in the past. By establishing the Mission and providing services for the people, however, the missionaries likely would have expected more people to move into the area which obviously would increase the population. The primary reason of attracting people into the area was based more on the desire to draw individuals into

the Catholic faith than to provide development inputs to them (this is not to say development inputs are not an important part of Mission work, they are secondary, though, to evangelization). Thus, the missionaries did expect the indigenous population to increase but this expectation appeared to have been formulated after the fact and was not a specifically anticipated outcome of establishing the Mission in Lwawu.

One outcome of development inputs which was expected, or at least strived for, was lower infant mortality as a result of improved health care provided in the health centre. No data were obtained directly linking population increase to improved health care, but several conjectures may be related to these variables. A higher female to child ratio would indicate either that females were having more children and/or that more children were surviving per female. When analyzing census data of regions throughout Mwinilunga District, the highest female to child ratios occurred in areas which have access to health centres and other development inputs. Doctors in Kalene Hospital 70 km north of Lwawu stated that the birth rate in the area is increasing. In Lwawu, even though infant mortality appeared to be high (around 30%) all people told me they take their children to the health centre if they are ill. A conjecture may be made that development inputs, especially the health centre, have resulted in the expected outcome of improved health which leads to population increases.

It may be expected that as a consequence of future development processes in Lwawu, its population will continue to rise due to both inmigration and more births. This is likely to result from secondary or non-stated objectives of the missionaries. It appeared that most of the Catholics in Lwawu were well-established residents who had lived in Lwawu a relatively long time. On the other hand, the missionaries themselves said they did not know most of the new arrivals to the area, especially refugees. This seems to imply that in all likelihood newly arrived people view Lwawu Mission more as a source of services than as a place of religion. It did not appear that new arrivals, especially refugees, were Catholic. An important implication of this expected growth is that people in Lwawu will increasingly depend upon the Mission as a service centre. The missionaries should anticipate this expected outcome and make projections

concerning how many people can be handled by services provided at the Mission.

Direct or indirect:

The most obvious direct result of development inputs in Lwawu, although difficult to quantifiably prove, resulted from contructing homes out of Kimberly mud bricks which are made from local material and sun-dried. This could increase population density per living dwelling because Kimberly brick dwellings are usually bigger and certainly more permanent than traditional pole and mud huts. Already in the 1950s, Turner (1957) referred to the trend towards permanence as a result of Kimberly brick homes. In 1985 this was even more true. A logical result of larger and more permanent dwellings is that more people can comfortably live in one structure, thus density per dwelling was higher in 1985 than in the past. Furthermore, population increases will also result in higher densities unless more dwellings are built.

Another direct result of development inputs is the effect education and integration with elements of modernization have upon attitudes of people towards population characteristics. Findings in this chapter indicate young and educated people have a more rational interpretation of biologic processes than others. In other words, these people link the excessive population rise with having too many babies rather than blaming it on refugees. Of course, one must be more than merely educated if attitudes towards population variables are to be influenced. This is apparent by findings indicating people by and large still want as many children as they can. At 54% of the proportion of total population, children are in great abundance. No outside observer can say what is an appropriate number of children to have but certainly if indigenous people themselves all commented that there are too many people in the area, then 54% of the population seems to be too high a proportion of children. For comparative purposes, the overall proportion of children per total population in Zambia based on 1977 UN estimates was 47% (UN 1983). As illustrated on plate VI.5, Lwawu 1985 has a greater proportion of children per total population than similar regions in the past. For six countries in central Africa proportions of children per total population range from 45% in Botswana to 51% in Kenya and

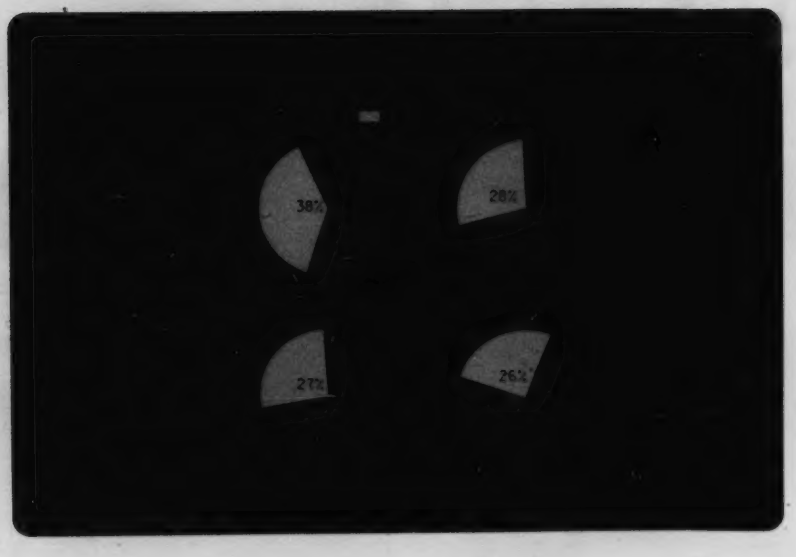

Plate VI.5 Comparison of proportions of males, females, and children between data from Turner 1950s, Zambia census 1969, UN 1977, and L. Weissling 1985.

Zaire (UN 1983). Therefore, assuming there are too many people in Lwawu, what effect could development inputs have on alleviating this situation? I would expect that the point at which development processes come into play would occur when people realize that (1) the cause of phenomena occurring in a system can usually be rationally and scientifically explained and (2) individuals themselves must accept responsibilities to change phenomena which they believe are necessary to alter. The first variable appears to be present in Lwawu, but there is little evidence suggesting the occurance of the second variable. The question is, what development processes might be implemented which will directly contribute to changes in people's attitudes and behaviours? An obvious development input related to demographics is the use or encouragement to use contraceptives. Some men in Lwawu already use condoms when involved with women other than their wives and it is certain this usage was not taught or encouraged by Lwawu Mission personnel. What this may mean is that some men have accepted responsibility for their actions. They may realize the consequences of sexual behaviour and manage to obtain contraceptives from outside the Lwawu area. On the other hand, they may obtain condoms simply to protect themselves from venereal disease. What remains to be seen is whether eventually people will want to use contraceptives between a husband and wife or wives. It is doubtful that this will occur without the encouragement of development agents (i.e. missionaries). Unless the Catholic Church changes its attitude, personnel at Lwawu Mission will not be initiating the education needed to encourage contraceptive use. The Zambian government also has not stressed family planning. A pervasive attitude amongst most Zambians is that large families are desirable (Kaplan 1979). Thus, an influence of Lwawu Mission upon population increase is that there will be no effect as a result of direct intervention on the matter. It is expected the population will continue to increase.

Long or short term:

It is difficult to analyze long or short term demographic consequences in Lwawu because of the nature of the Mission. All missionaries have taken vows of obediance meaning

they are assigned to places of work. In other words, they are not told how long they will be in one place. Furthermore, an overall objective of European/North American missionaries is to train indigenous people to take over mission work. Even if specific development objectives were made, the missionaries would be constrained because they would not know the time they had to implement projects. Regardless of this deduction, there was nothing observed in Lwawu which indicated there were any long or short term inputs or projects aimed at demographic variables within the Lwawu rural system. I do not expect that there will be any in the future, either.

Lasting or transitory:

Theoretically, in an area being affected by development processes, population numbers initially change from being relatively stable to increasing as inputs improve health, incomes, etc. of the target population. This transitional trend is expected to be replaced in the long run by a more limited growth as people desire fewer children. Lwawu does not appear to be in this stage of the cycle. It is difficult, in fact, to predict whether a downward trend will ever occur in population numbers. Based on 1985 data, a lasting trend of population increase can be expected. Another trend which appears to have a lasting effect is the permanence of settlement evidenced by usage of Kimberly bricks (and other indices). How this will affect other demographic aspects of the population is difficult to predict. A further trend related to demographics but based on migrational attitudes is that fewer males are expected to move away from Lwawu than in the past because of the adverse conditions in urban areas. This may produce a lasting trend, unless the economic situation improves and jobs become available in cities (which is unlikely), of a higher proportion of males in the area. This too would lead, perhaps, to higher birth rates.

An important attitudinal response to a lasting demographic trend is concerned with the impacts of refugees. If indeed refugee females have more children than Lwawu originating residents (which is the case based on a small sample of data from Angolans) then the continuing influx of refugees would definitely increase the population in the area. There is no

indication that either hostilities in Angola or economic difficulties in Zaire will cease in the near future. I expect the influx of refugees and an the increase in population to continue. Furthermore, even if situations in Angola and Zaire improve it is likely that people would not want to return to their homeland as they can receive more services and commodities at Lwawu than they could in their respective countries.

Local-regional-national-international:

Again, it is difficult to discern the effects on demographic variables in Lwawu associated with the origin of development influences. At a local and regional level, fertility rates and family size are by and large based on traditional customs and characteristics of the Lunda. Having as many children as God or a deity will give was mentioned by Turner as a pervasive attitude amongst people he interviewed in the early 1950s. At a national level, policies such as encouraging Kimberly bricks for dwelling construction, concentrating villages, and providing schools may lead to demographic changes although often indirectly. Internationally, demographic variables are mainly influenced by the philosophies and goals of the Catholic Church. Because the Mission is a focal point of most of the activities, services, and outside influences upon Lwawu one cannot help but wonder how the background of missionaries brought up in an American or European culture affects their attitudes and behaviours towards indigenous people. If any non-indigenous influence contributes to changes in demographic variables amongst the residents it would most likely originate from the Priest and Brothers in the Mission. Their influence is not taken as gospel by all Lwawu residents but their role in the system is considerable. The Mission has the potential to initiate beneficial inputs and processes upon the Lwawu people if properly planned and integrated with the needs of the local society.

If one accepts a premise that the opinions of indigenous people concerning processes occurring to their system are an important measure of the actual consequences of development, a conclusion may be drawn that there are too many people living in Lwawu. Quantifiable

information also leads to this conclusion. What this means in terms of specifically relating this chapter to the conceptual framework is that demographic characteristics, along with inmigration, directly result in changes to the rural system. The factors of the attractiveness of the Mission to inmigrants, the high female/child ratios, high population densities, and the pervasive attitude that one should have as many children as possible all lead to population pressures on the rural system. These lead to more people than the land can support and contribute to the development of social tensions. Both these factors may lead to socio-economic and ecological imbalances. These imbalances are manifested by attitudes people have towards specific measures of development efforts and are discussed in the following chapter.

VII. ATTITUDES AND PERCEPTIONS TOWARDS DEVELOPMENT INDICATORS

> The link of modern scientific knowledge with wealth, power and prestige condition outsiders to despise and ignore rural people's own knowledge...Rural people's knowledge and modern scientific knowledge are complementary in their strengths and weaknesses. Combined they may achieve what neither would alone (Chambers 1983:75).

This philosophy espoused by Chambers is also a premise of this thesis. Regardless of actual development inputs or who initiates them, the success or failure of projects should ultimately be decided by the people to whom development is directed. The problem with research for this thesis was that indigenous people's attitudes and perceptions were viewed from an outsider's perspective. Development indicators and what constituted people's basic needs were derived from academic literature and Western viewpoints about what rural Africans should have. Even with these limitations, indigenous people were considered vital sources of information and their responses may be viewed as valid examples of their thoughts and opinions. To analyze the impacts of development from this philosophical basis one must (1) talk personally with the affected people in their own environment and (2) determine what measures one may use to indicate development and ask questions related to these issues. The first method is relatively easy to achieve as long as people are willing to talk and do not mind a visit from an outsider. Before the second method is implemented one must list variables which are measurable and indicate the impacts of phenomena under investigation. For this research, distinction had to be made between measures and indicators of development. Indicators serve to point to or represent as best as possible goals or elements of development (McGranahan 1972). They may be based on factors both directly and non-directly measurable. Direct measurement, as an example, is GNP which measures, amongst other things, the output of goods and services of a country or region and indicates overall economic strength. On a micro-level most commonly accepted indicators are based on indirect measures of different aspects of welfare (Baster 1972). This is not to say indirect measures cannot be quantified, merely that measures may be used which are not direct indicators of what one is trying to analyze. Specific measures must be determined which enable inferences to be drawn indicating the impacts of phenomena. In this chapter, the

impacts of development inputs, from the point of view of Lwawu residents, are the phenomena to be measured. They were indicated by recording the attitudes and perceptions of people towards aspects of their lives which relate to their welfare and well-being. These were derived from common sense and from what most development programmes try to achieve. Included were measures which indicate how well the basic needs of an individual are satisfied such as availability of food, health care, and income. The degree to which such needs are satisfied would constitute the welfare which that person receives (Drewnowski 1972). In Lwawu, degrees of satisfaction are from people's viewpoints. This chapter reviews qualitative observations of Lwawu development and responses and statistical descriptions of responses to questions asked of some Lwawu residents. They are not meant to be statistically valid for all Lwawu residents. Rather they serve as examples and are useful to make qualitative conclusions.

A. Personal Observations of the Study Area.

Before formulating questions pertinent to measuring impacts of development it was necessary to become familiar with the people and environment of Lwawu. In addition, as discussed in this section, the perceptions I had of the area merely from talking to missionaries and observing people from roads were far different from what I discovered when I sat down and talked to individuals in their own village. Throughout his book, Robert Chambers (1983) stresses that often outside researchers only observe study areas which do not pose difficulties to the researcher in terms of comfort and security. Research findings are often biased towards people who are most likely to come in contact with outsiders. These people usually are relatively wealthier and politically more influential than their fellow villagers. Those who truly need help from development projects are often ignored. Granted, the study area in Lwawu was well within the accessibility and comfort of the missionary residences where I stayed and no major discomforts were encountered during field research. Even in this small study area, however, there were more people and phenomena than would be observed if one confined themself only to the Mission grounds and roads.

The first impression I had of the Lwawu area upon arriving on 8 June 1985 was that villages looked more permanently established than on previous visits in 1974 and 1979. All huts were made of Kimberly brick and many villages had hedges and fruit trees, all indicating permanence. In addition, it was obvious there were more villages in the area than previously. People along the roads and around the Mission grounds were relatively well dressed and looked healthy. Overall, the area impressed me as a coherent and stable community whose inhabitants received many services and benefits from the presence of the Mission and other facilities. This impression continued even after walking along roads and trails greeting people (but not actually going into people's villages). Hypotheses were formulated which were based on the assumption that the Mission since 1955 had increasingly contributed to improved welfare and well-being of indigenous Lwawu residents. These opinions started to change when visits to villages commenced. After the first day of census surveys on 20 June 1985 I noted in my journal, "the children and many adults appear more poverty stricken when observed in their villages than when only viewed from the road". Admittedly, poverty in this case is from a Western-oriented and biased viewpoint. Nevertheless, indicators of what most people would term poverty became more apparent with each visit to people's villages. The primary reasons for thinking this were that many children had distended bellies and it appeared that there was a lack of food (both quantity and quality) in villages. These indicators alone would not lead to the conclusion that people's welfare was low. In conversations with Lwawu residents, however, mention was made that people rarely ate meat and only seldom ate vegetables, have many babies who die, and very little income. By reviewing all qualitative information, it became apparent that people in Lwawu were not necessarily better off because of the presence of modern services and inputs. On the other hand, most people were very friendly, would laugh and make jokes with me, and be very congenial. They were not suffering and were not depressed. The objective became to ascertain whether indicators of welfare and well-being have increased in the opinions of people to whom development was directed.

B. Indicators of Welfare and Well-being of Lwawu Residents.

Hypothesis No. 5: **In the opinion of indigenous residents of Lwawu, the degree of satisfying basic needs such as the availability of food, income levels, and overall levels of health have increased leading to improvements in general standards of living**, was based on the assumption that development inputs have increased people's welfare but with the knowledge that this may not necessarily be true. The ultimate outcome of this analysis should lead to conclusions indicating how these inputs have affected the rural system of Lwawu. The basic needs: food availability, income, and health may be used as indicators leading to conclusions about people's general welfare and well-being. Questions were formulated to gather information about these measures. In all, interviews were conducted at 17 villages (Figure VII.1). Cross tabulations were performed with each measure and other relevant variables. In this way trends emerged indicating whether development inputs in Lwawu have been a success. It must be noted that in the following discussion the year 1978 was used in comparative questions because that was the year St. Kizito school closed and as such it was an easy year for people to remember. As well, it was the year the Mission shifted emphasis from education to agriculture development. The year 1964 was used in questions as it was the year of Zambian independence and an easy year to reference. Because interviews were relatively informal in that questions asked of people were modified or deleted if they were inapplicable, a variable number of responses were recorded. In the following discussion the total number of respondents refers to the number of people represented by a village spokesman when asked questions pertinent to his village.

Food availability:

Two questions were asked concerning food availability: 'Is food more available now than in 1978? 1964?'. It was specified to interviewees that food meant anything grown, hunted, or bought and used for in-village consumption. Responses to these questions are listed in table VII.1. As noted, a large proportion of people (83%) thought there was more food in 1964 than

Table VII.1 Perceptions of changes in the availability of food since 1978 and 1964.

	Food availability in 1978 as compared to 1985:			
	Less food in 1978	Same amount	More food in 1978	Total
Number of responses:	16	35	62	113
Percentage of total:	14	31	55	100

	Food availability in 1964 as compared to 1985:			
	Less food in 1964	Same amount	More food in 1964	Total
Number of responses:	17	2	92	111
Percentage of total:	14	2	83	100

Source: 1985 Lwawu interview survey (L. Weissling)

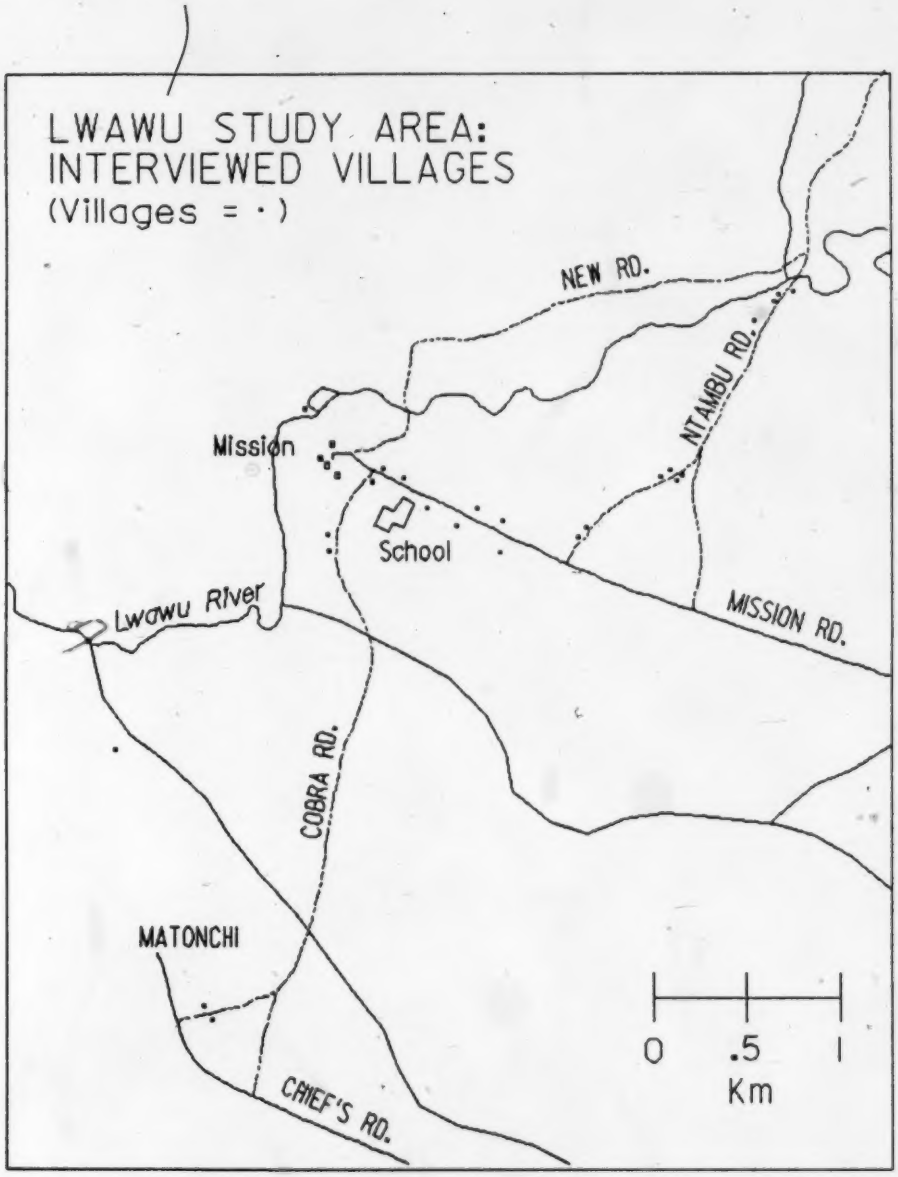

Figure VII.1 Villages where interviews were conducted.

1985. In addition, a majority of people (62%) thought there was more food in 1978 than 1985. Most people in 1985 perceived that they have less food than they did in the past. These questions elicited further comment by many people concerning why there was less food in 1985. Common reasons centred primarily on food being cheaper and more readily available in 1978 and 1964. In addition, many people commented that there were more game animals and consequently more meat in the past. One village of 5 adults blamed food shortages and high prices on the government. Further inferences may be made about food availability by cross-tabulating this with other variables.

Using food availability as a dependent variable, several cross-tabulations were performed on MIDAS. This produced decriptive statistics indicating trends between the dependent variable and various independent variables. The first claim investigated whether opinions about food availability depended on attitudes towards changes in villages' incomes. Overall, no clear trend was apparent using 1978 as a year of reference. However, 51 (51%) out of 101 people indicated that their income has decreased since 1964 and 96% of them also said food availability has decreased since 1964. it appears that in 1964 food was dependent on the amount of money people had to a greater extent than in 1978. One conjecture may be made explaining this. If more food was available in 1964 it most likely would be more available to buy. A strong relationship would exist between possessing money and being able to buy food. Between 1964 and 1978 food seems to have become less available. Thus, even if people had more money there would be very little to buy and the relationship between income and food availability would be weaker.

It would be expected that food availability would be positively related to changes in crop output over time. Crop as defined during interviews was any food grown in fields (not garden plots), both for commercial and personal consumption. This would include cassava and maize. No trend emerges when crop output since 1978 is compared with food availability since 1978. Forty three (50%) out of 86 people said crop output has decreased or remained the same since 1964 and 63% of them said there was more food in 1964. These findings suggest two

trends. First, no consensus is evident relating crop output in 1978 and food availability in 1978. Second, whether crop output has decreased, increased, or remained the same since 1964 most people still agree there was more food in 1964. This is a logical finding when it is remembered many people told me game meat and market commodities were more plentiful in 1964 than 1985. People would not directly relate changes in crop output one way or another to food availability when all food seemed to be more available in 1964. Crop output alone does not appear to be associated with overall food availability. Food availability could increase in the future, however, if two projects are successful in Lwawu, fish farming and raising domestic cattle.

There are 204 individual fish ponds in the Lwawu region ranging in size from 4x6 metres to 24x24 metres (Plate VII.1). Seventy one fish farmers tend these ponds, 63 of whom were trained by the UN. The UN finances fish farming projects in the region to provide income earning opportunities for Angolan refugees. The UN stipulated that out of 20 farmers trained, 12 should be refugees. In addition, if Zambians build their own ponds, the UN will pay for labourers only if they are refugees. Fish raised in the ponds are bream, specifically, Sarotherdon macrochin, Sarotherodon andersonnii, and Tilapia rendalli. Fish are fed cassava. Ideally, each pond could provide adjacent villages with fish three times per month. Demand exceeds supply, however, because people insist on being sold or bartered fish before they are ready to be harvested. This appeared to be the major problem with the fish farms. Most farmers managed their ponds properly but were constrained because of the high demand for their product. The success or failure of fish farming will depend on whether farmers are given the opportunity to increase their stock.

Bro. Weissling has successfully been raising cattle since the mid 1970s. In 1985 his herds consisted of approximately 70 head. The missionaries hope indigenous people also will raise cattle as soon as they obtain enough capital for this endeavour. All people interviewed expressed a desire to have more beef and many wished to raise cattle themselves. This would be expensive and may involve too much risk to be viable. In the recent past beef has been available

Plate VII.1 Several of the fish ponds near Lwawu Mission.

to buy from the missionaries when they butcher cattle for Mission use. However, usually only the entrails and parts of the animal not eaten by the missionaries are sold. There was no evidence that beef was an important or significant part of any villager's diet. Other domestic animals such as goats and chickens roamed throughout the area but did not appear to be extensively used as food. Taboos about eating domestic animals or their products (eggs) were common amongst women and children and it appeared that teenaged and adult males were usually the main consumers of these foods. Most teenage and young adult males were robust, muscular, and healthy-looking. Nevertheless, all people stated they did not have enough meat in their diets and it may be assumed that this is an accurate perception.

Village income levels:

Other questions measuring indicators of development were 'Has your village income increased since 1978? since 1964?'. No attempt was made to gather specific information about actual amounts of income. There were two reasons for this. First, even within villages, people were hesitant to let anyone know how much money they had. I was told by my translator that many people bury or hide their money so others will not steal it. Secondly, the national currency in Zambia, the Kwacha, is so vulnerable to inflation and black marketeering that any income figures in Kwacha would be meaningless as their value can vary day to day. As shown in table VII.2, most people (61%) think their village income has increased since 1978 but are evenly divided about income since 1964. The most important point from these data is drawn from comments made after these questions were asked. Many people told me, 'sure, we have more money now but there is nothing to buy and if there were it is too expensive'. There may indeed be more money in Lwawu but without the availability of commodities to purchase, people's cash has little practical value.

Income levels as a dependent variable appear to have a clear association only with the independent variables of crop output and whether a village member works for the Mission. Thirty eight (48%) out of 79 people said their crop output has increased since 1978 and 100% of

Table VII.2 Perceptions people had about changes in their village income since 1978 and 1964.

	Village income in 1978 as compared to 1985:			
	A decrease since 1978	No change since 1978	An increase since 1978	Total
Number of responses:	18	25	66	109
Percentage of total:	16	23	61	100

	Village income in 1964 as compared to 1985:			
	A decrease since 1964	No change since 1964	An increase since 1964	Total
Number of responses:	51	0	50	101
Percentage of total:	50	-	50	100

Source: 1985 Lwawu interview survey (L. Weissling)

them also indicated their village income has increased since 1978. In addition, no person who said crop output decreased said their income increased. When 1964 is used as a reference, 43 (54%) out of 79 people said crop output has increased and 100% of them also said their income has increased. Of the 36 (47%) out of 79 who said crop output has decreased or remained the same since 1964 100% said their income has also decreased since 1964. These figures suggest that crop output is positively associated with income.

Another indicator of causes of increased income is whether a village member(s) works for Lwawu Mission or related facilities. Forty eight (47%) out of 103 people had at least one village member working for wages at the Mission and all of them said their village income had increased since 1978. The 55 people who do not have any village member working at the Mission were evenly divided between village income decreasing, increasing, or remaining the same. (Cross tabulation was not performed with data with 1964 as a reference because people in 1985 most likely were not old enough the work for the Mission in 1964.) This relationship illustrates the importance of the Mission as an employer of wage labour. People have been hired for various jobs ranging from teenagers doing chores for a few hours to adult men hired full time as a cook, tractor driver, or laundry man. Most people have been hired after moving to Lwawu which is reflected by there being few people who said they moved to Lwawu because of employment. Salaries have been high compared to what other Lwawu residents make, but according to Pritchet (1985) wages are lower than what would be received in urban centres. This means that food and commodities from outside Lwawu, which cost about the same or more as in urban areas, are often too expensive to buy. In addition, food and commodities sold directly by the Mission are cheaper than they would be if purchased through urban markets and conditions. This appears to have created a false economy where people view the Mission as a source of cheap goods while still having to interact with national economic and market forces. Perhaps this will lead to perpetuating the attractiveness of the Mission while inadvertently making it more difficult for people to obtain enough income necessary to buy needed goods which are not subsidized by the Mission.

Crop output:

As previously stated, crop output referred to both commercial and subsistence food grown in fields. These usually are maize and cassava although finger millet is grown, primarily for making beer. Responses to questions concerning crop output are listed in table VII.3. While approximately an equal number of people said crop output has increased since 1978 and 1964, more people said crop output decreased since 1964 than since 1978. Again, this suggests there was more food in 1964 than 1985. It is important to note that since 1964 rural farmers have been encouraged by government programmes and directives to participate in the market economy by growing cash crops. It would be expected that commercial farming would be an important part of the Lwawu economy. In relative terms it is an important source of income and activity for many Lwawu residents but the accompanying problems encountered with cash cropping seem to make these efforts hardly worth it. Four out of twelve villages consisting of more than one adult male and female have at least one member working as a commercial farmer. When open-ended questions were asked eliciting comments about cash cropping most everyone's response dealt with their problems. These centred on the expense of fertilizer, the low prices paid by the government for maize which usually does not cover costs of production, and lack of proper guidance in methods of management and production. In southern Zambia farmers also have expressed similar concerns (Baylies 1979). In addition to these problems, according to the missionaries many people are unaware of how to manage money. Government loans are easy to obtain but farmers have difficulty planning what yields and prices they will receive after harvest and what inputs are needed to make their agricultural produce profitable. Consequently, farmers often have little chance of ever paying off their loans and are constantly in debt. Farmers are also constrained because of physical characteristics of the land. In general, soils in the region are considered to be highly leached and highly acidic Barotse sands (Johnson 1980c). Pockets of less acidic red clays also exist scattered throughout Mwinilunga District. No tests or analyses of the soil in the immediate vicinity of Lwawu have been done. Seven soil samples were taken during field research for this thesis. Due to unplanned delays in analyzing

Table VII.3 Perceptions of changes in village crop output since 1978 and 1964.

	Crop output in 1978 as compared to 1985:			
	A decrease since 1978	No change since 1978	An increase since 1978	Total
Number of responses:	17	24	45	86
Percentage of total:	20	28	52	100

	Crop output in 1964 as compared to 1985:			
	A decrease since 1964	No change since 1964	An increase since 1964	Total
Number of responses:	30	13	43	86
Percentage of total:	35	15	50	100

Source: 1985 Lwawu interview survey (L. Weissling)

the samples, only tests for pH were conducted. The samples became too old to test them for nutrient content. The equipment used to test for pH was the Fisher Accumet Mini pH meter with combinational electrode. Soil was prepared by a soil paste method (McKeague 1976). All soils were reddish in colour and qualitative analysis suggested they were more clay than sand. Levels of pH ranged from 5.61 for soil from a field of cassava a year or two from being ready for harvest to 6.78 for soil from a hillside field of maize after harvest. These levels are moderately to slightly acidic. The range of pH suitable for optimum growth of maize is 5.5 - 7.5 (Hausenbuiller 1972). Thus, assuming these soils are a true representation, Lwawu does not have highly acidic soil. Indicators suggest, however, that Lwawu soil is poor and over-use of it for agriculture leads to low yields and presumably soil infertility. The missionary who works closely with agriculture, Bro. Weissling (1985), has made several qualitative observations since he initiated farming co-operatives in the early 1980s. These include the fact that yields fall drastically after using the same field for two or three consecutive years and that yields were much higher in fields that were weeded regularly. Therefore, if pH levels were adequate, low yields and soil infertility appeared to be a function of exhaustion of soil nutrients and lack of proper field management. More study would need to be done, but proper field management and fertilizer most likely are the most needed inputs to make commercial farming viable.

One further point about crop output is necessary. Responses were unanimous amongst Lwawu residents when asked if they thought the soil was good for growing crops. All said the soil was very good, although several said fertilizer would help. This is significant because if people perceive the soil as adequate it may be difficult to persuade them to change practices or inputs that would be necessary to increase crop yields. More importantly, the question remains whether or not Lwawu residents should be trying to raise commercial crops at all given the high probability that they will not make a profit from their endeavours. As this is interrelated with other aspects of the Lwawu system, this thought will not be expanded until later chapters of this thesis.

Levels of health:

Perceptions of levels of health were ascertained by asking the questions, 'Are people healthier now than in 1978? in 1964?'. These were general questions covering all health aspects of indigenous people in general who were part of the interviewee's social environment. As shown on table VII.4, there was no consensus whether people think they are more, or less, healthy in 1985 than the past. This alone is not a significant finding. When the importance of the Health Centre at Lwawu as a service is considered these statistics are more meaningful. A great effort is expended both in money and human resources to provide health care for indigenous residents. The centre has provided care to people continuously since 1964. Thus, it would have been expected that a significant majority of people would have thought people's health had improved over time. Because this was not the case, the objective was to establish what variables have contributed to the opinions people have towards their health.

As a start, it is interesting to note answers to open-ended questions concerning why Lwawu residents think people are more, or less, healthy in 1985 than the past (not everyone gave reasons). Responses and the number of representative adults with that view are the following:

Reasons for people being more healthy in 1985 than the past:

1. More rural health centres.....21
2. Better education, medicine.....8

Reasons for people being less healthy in 1985 than the past:

1. Refugees and other migrants bring in more disease.....35
2. More food to eat in the past.....7
3. Overpopulation causes lack of good food.....11

Overall, these seem rational, logical reasons with the possible exception of blaming refugees. It may be assumed, however, that the absolute amounts of disease will increase with population increase. This was confirmed by doctors at Kalene Mission Hospital. With more refugees and

Table VII.4 Perceptions of general changes in people's health since 1978 and 1964.

Perceptions of people's health in 1978 as compared to 1985:

	People were less healthy in 1978	No change since 1978	People were more healthy in 1978	Total
Number of responses:	52	2	63	117
Percentage of total:	44	2	54	100

Perceptions of people's health in 1964 as compared to 1985:

	People were less healthy in 1964	No change since 1964	People were more healthy in 1964	Total
Number of responses:	52	2	55	108
Percentage of total:	48	2	50	100

Source: 1985 Lwawu interview survey (L. Weissling)

migrants there will be more absolute but not proportional amounts of disease.

A good source of reliable information about health was the head nurse at the Health Centre, Sister Madeline. According to her, the most common ailments in the area are malaria and malnutrition. Malnutrition, according to the nurses, is caused chiefly by eating the wrong foods which have too many carbohydrates. In addition, the lack of meat and nutritious vegetables further aggravate the problem. A need, therefore, would be to have classes for women teaching them to use proper foods. Problems may arise, however, because many women have never seen or used the type of foods necessary for a well-balanced diet. The Sisters thus think they would have difficulty persuading people to alter their diets. Wenlock points out that traditional food (other than cassava) should be adequate to alleviate most malnutrition problems. He writes (1979:204),

> ...it is not that foods of the wrong type or quality are consumed but rather that adequate traditional foods are unavailable in sufficient quantity.

If it is assumed more food in the past meant sufficient quantities of traditional food, then Lwawu residents' perceptions linking health and food generally conform to Wenlock's findings. In comparing food availability and health, 16 (14%) out of 111 think there was less food in 1978 than in 1985 and all of them also stated people were less healthy in 1978. Sixty (54%) out of 111 people thought there was more food in 1978 and 62% of them stated people were more healthy in 1978. When 1964 is used as reference percentages of responses with similar associations are the same. The difference is that more people, 90 (83%) out of 109, thought there was more food in 1964 than 1985. As percentages of total respondents, people perceiving direct positive relationships between food and health (i.e more food, more healthy; less food,less healthy) make up 48% of total respondents with 1978 as a reference and 66% of total respondents with 1964 as a reference. Thus, findings indicate that perceptions of levels of health are somewhat dependent on perceptions of food availability. The linkage between food, nutrition, and health is assumed.

A chronic health problem which is prevalent and debilitating to most, if not all, Lwawu residents is malaria. Among a random sample of Health Centre records, adults and children were treated for malaria 1.08 times per year, although many people do not go to the centre every time they are sick with the disease. Malaria is listed as the number one cause of child deaths in Zambia (Wenlock 1980). The alarming problem in Lwawu and elsewhere in Zambia and Africa is that the incidence of malaria is increasing due to a strain of the disease which is resistant to the most common drug to prevent and treat malaria: chloroquine. This chloroquine resistant malaria was first recognized in Kenya in 1978 and has been spreading throughout Africa, including Zambia, since then (Wolfe et al. 1985). Doctors at Kalene Hospital have noticed a marked increase in chloroquine resistant malaria since 1975. There is every indication that this problem will only get worse in the future.

Regardless of the reality of the afflictions facing Lwawu residents, the Health Centre plays a key role in providing needed care for the people in the area. All people visited during field research said they use the centre although adult men who are of the fundamentalist Protestant denomination, the Apostolics, do not use Western medicine. Nurses said an average of 2000 people a month visit the Health Centre and this increases during the rainy season, the time of the highest incidence of illness. It is not uncommon for people from Angola to make a trip to Lwawu for health care. In a random sample of health records of individuals, the following mean frequencies of visits by sex and age class amongst people who came to the centre for treatment were recorded.

Female Children: 13.52/year

Male Children: 10.97/year

Female Adults: 9.18/year

Male Adults: 10.17/year

Even though the centre is frequently used, witchcraft and traditional tribal medicine is still commonly practised, according to Mission personnel and indigenous residents willing to admit to its usage. (These local residents would only admit that witchcraft is used frequently, they

would not mention anything more about the subject.)

Overall, there is no clear explanation why there is no consensus amongst Lwawu residents whether they are more, or less, healthy in 1985 than the past. They often associated the availability of food with levels of health. More investigation would be needed to ascertain if other variables contributed to their opinions. One likely reason why people may not think they are more healthy in 1985 is that if they may expect Western medicine to be a 'cure all' to any illness. It is understandable that people with these expectations may think they are not healthier in 1985 when they realize medicine does not necessarily cure all sickness. Crehan (1984) mentions that indigenous people near Kasempa in Northwest Province, Zambia perceived that Western medicine and treatment could easily be dispensed by anyone who was European. Perhaps this explains the varied perceptions of levels of health people have in Lwawu. Also, a decrease in use and availability of nutritious foods and the increase in the incidence of malaria would be expected to decrease levels of health. These most likely are the major factors which lead to people thinking they are less healthy. Perhaps the Health Centre should concentrate on preventive medicine rather than exclusively curative, a suggestion made by Dumont and Mottin (1979) about Zambia as a whole.

Overall well-being:

Regardless of what individual measures indicate, the ultimate impact of development inputs may be measured by whether people think they are better off overall than before these inputs arrived. The question was posed to people, 'Overall, are you and other village members better off now than in 1964?'. Figures in the table VII.5 indicate a majority of people (62%) do consider themselves better off in 1985 than in the past. The objective was to determine what independent variables were associated with these perceptions. In this way conjectures may be made suggesting which indicators of development contributed to people's perceptions of their welfare and well-being. Qualitative analysis is used to make these conjectures and is based on findings from all sources of data. The purpose of this discussion is not to present unequivocal

Table VII.5 Perceptions people had about their overall well-being.

	Do people think they are better off in 1985 than the past?			
	Yes, better off	No, not better off	The same	Total
Number of responses:	55	23	11	89
Percentage of total:	62	26	12	100

Source: 1985 Lwawu interview survey (L. Weissling)

proof but to offer hypotheses about linkages between rural development inputs and the well-being of the people to whom the inputs are directed.

No clear trends of association exist between perceptions of being better off and changes in income since 1964, and with crop output since 1978 and 1964. Several trends are apparent with other independent variables. Twenty five (28%) out of 88 people said their income remained the same since 1978 and all said they are better off. Forty five out of 88 people said their income had increased since 1978 and 64% of them also said they are better off. Conversely, 18 (20%) out of 88 people said their income decreased since 1978 and all of them also said they are not better off or are the same. Thus, income levels since 1978 perceived as increasing or remaining the same were also associated with being better off. Cross-tabulation between education and being better off indicates that 22 (36%) out of 61 people were from villages with 25 to 50% of adult members having some formal education and all of them think they are better off. Twenty three (37%) out of 61 people were from villages with over 50% of adults having some education and 78% of them think they are better off. Sixteen (26%) out of 61 people were living in villages with less than 25% of adults having some education and 56% of them said they are <u>not</u> better off. In general, then, having some formal education may be viewed as being positively associated with people's perceptions of overall well-being. When considering food availability since 1978 and 1964, 100% of those who said there was less food in those years also said they are better off in 1985. However, no clear association is apparent between having more food in the past and being better or worse off overall in 1985. Thus, the indication is that having more food in 1985 contributes to people thinking they are better off but if they had less food in 1985 it doesn't make a clear difference to their perceptions of well-being. A strong association exists between levels of health and opinions of well-being. Amongst 35 (39%) out of 89 who thought people were more healthy in both 1978 and 1964, 82% thought they are the same or not better off in 1985 than in the past. Of the 52 (58%) out of 89 who thought they were less healthy in 1978 and 1964, 90% thought they are better off in 1985. Amongst all independent variables, levels of health appears to be most associated with

overall well-being. Two additional variables are also pertinent to compare with overall well-being. Fully 94% of those who originated in the Lwawu area think they are better off in 1985 than 1964. Those originating elsewhere in Zambia and Angola show no clear trend. Finally, 100% of those from villages with at least one member working for wages at Lwawu Mission think they are better off while those without a Mission associated employee show no clear trends.

C. Conclusion.

This chapter presented the attitudes and perceptions people have towards development indicators. A major objective of this chapter was to ascertain linkages between indicators and development inputs at Lwawu. Food availability was one indicator. Food definitely appeared to be more available and plentiful in the past than in 1985. This appeared to have resulted from two sources. First, the presence of the Mission has attracted more people to the area and consequently there is more demand for food. Food such as game meat has subsequently decreased. Second, a breakdown in the national economy and infrastructure has led to reduced availability of food. Concerning another indicator, income, a majority of people viewed incomes as increasing since 1964 and the Mission appears to have been a direct contributor. Increased income did not necessarily mean people could obtain more goods and commodities. Nevertheless, most people in Lwawu think they are better off overall in 1985 than the past. What is important for future planning is to analyze what variables are most associated with people's overall well-being.

Being better off was associated with recent increases in income, having some formal education, having more food, and especially with being more healthy. The Mission and government have directly affected the incomes, education, and health of the people in the area through their inputs and provision of services. Both positive and negative impacts have resulted from these inputs as have been discussed in this thesis. Regardless of what has occurred in the past, these variables may be used as bases for future objectives of development of the area and

development agents should concentrate on providing them. Several difficulties associated with these variables must be mentioned, however. By achieving higher income levels (presumably by inputs creating more wage labour) class distinctions based on income invariably emerge. People in 1985 who worked for wages had nicer, better made, larger dwellings than non-wage earning neighbours. While a basic formal education cannot and should not be denied anyone, the risk exists that people will learn skills not applicable to rural life when appropriate rural skills are precisely what people need. Any development agent will find it difficult to increase the availability of food. Preferance for cultivation of nutritious traditional foods rather than commercial crops could be a good start. Finally, health care, as the most strongly dependent variable of overall well-being, should continue to be an integral part of Mission services. This is with the realization that chloroquine resistant malaria is becoming an increasing and continuous problem in the area.

Hypothesis No. 5 cannot be confirmed nor rejected. There was no overall consensus amongst indigenous residents towards the development measures analyzed in Lwawu. While most people think they are better off, many basic necessities of life appeared to have become less available since 1964. In addition, there were no differences in attitudes based on where people lived in Lwawu, where they originated, the number of residents in their village, or when they moved to the area. It is difficult to conclude whether general standards of living have improved or not. Some suggestions may be made, however, related to the findings and these are discussed in the conclusion chapter. It is important though to first analyze the interactions of all components in the conceptual framework of Lwawu. This includes data analyzed for this thesis and leads to discussion about socio-economic and ecological imbalances in the area.

VIII. IMBALANCES AND STRATEGIES OF SURVIVAL

A. Socio-economic and Ecological Imbalances in Lwawu.

Economic relations and social relationships in peasant societies are inseparable (Bates 1976). Equally important is the interaction between people and the land. As part of any rural system these components affect most realms of rural life. When forces and processes act upon the dynamics of a system, changes may occur leading to tension and a breakdown of the fluxes and flows which help keep the system balanced. Findings from data analyses for this thesis have indicated the characteristics of the Lwawu population in terms of mobility, demographics, and attitudes and perceptions towards development indicators. Many aspects of life in Lwawu related to these findings are positive and beneficial to its inhabitants. The area is not without problems, however. It may be assumed Lwawu would not have evolved into what it is without direct development inputs. There are imbalances in the system as a result of some of these inputs which, if not identified and incorporated into overall planning, could negate the assistance development agents provide to indigenous people.

The basis of the problems facing Lwawu appear to be that there are too many people in the area for it to support. Data analyses have shown why the number of people in the area is increasing. Population numbers alone do not cause imbalances to a system. Many factors are involved. Of prime concern is the Zambian national economy. There is no evidence to indicate that national economic conditions have done anything but hurt the rural Zambian farmer since the mid-1970s. While the cash needs of rural Zambian people have increased because they became accustomed to purchasing manufactured goods, their income and the infrastructure enabling them to buy commodities has decreased (ILO 1981). The poor local and national economies may be viewed as contributing to imbalances in the Lwawu system. Competition for land and services also has led to imbalances. The influx of refugees has resulted in additional needs for space in the area. Refugees also were, in the early 1980s, recipients of large amounts of money from the UN to initiate fish farming, thus adding to competition as non-refugees did

not receive this aid. My own observation, supported by Pritchett (1985), points out another source of competition. It appeared that the more interaction one has with the Mission, the more commodities, income, and social status one achieves. Social tension from uneven income and status distributions have formed. Cultural characteristics of the Lunda also seem to contribute to the social tensions. Turner (1957) gives several examples of quarrels and distrust amongst neighbours pointing out that this possibly is because the Lunda are an autonomous and individualistic people. Taking all these reasons into consideration, Lwawu residents may be viewed as being under stress, likely as a result of overcrowding. Overcrowding in this context does not mean people do not have enough space for living dwellings but rather that a variety of phenomena are interacting to produce an environment conducive to manifestations of overcrowding. In Lwawu, phenomena leading to these manifestations are the poor national economy, competition with each other, and people's cultural background. Brown, McGrath, and Stokes (1976) mention that crowding contributes to many adverse reactions amongst the people affected. Several examples of these were observed in Lwawu.

One sign of social tension was that most people blamed others for things wrong with their lives. Anything from a lack of land, food, and firewood to accusations of stealing and even murder were often attributed to neighbours, kin, and especially refugees. At the time of Turner's study (and presumably throughout Lunda history) this mistrust could be diffused because people did not live in as close proximity to each other as they did in 1985. With people concentrated in a relatively small geographical area, and all intending to live there permanently, these social tensions appear. For development efforts this means that the ideal of participatory co-operation as espoused by Gran (1983a) and others may be difficult. The missionaries have found it frustrating to organize and encourage co-operative farming because people do not seem to be willing to work together. I heard co-op members accuse others of not working properly or of taking more than their fair share of payment. Another example of this characteristic was indicated by responses to several questions from interviews. Many respondents said they blame refugees for too many people and for an increase of disease in the

area. Overall, these observations may be generally identified as a component of the Lwawu system, namely, behavioural responses to changes. Changes need not necessarily result in negative responses. Neither should these social tensions be seen as irreversible.

Behaviour linked to ecological imbalances was illustrated by indigenous people's concepts of the future. Overall, people did not seem able to plan ahead or consider long term consequences of present phenomena. When asked how the lack of firewood could be alleviated, only one person (a St. Kizito graduate) said, 'plant more trees'. Most could not offer any suggestions although one spokesman said 'hire the Mission tractor to get wood from elsewhere'. Out of 73 representative people who were asked what would be the biggest problem in the future, 57% did not expect any problem or else they did not know. It appeared that people could identify problems in the past and present but had difficulty conceptualizing problems in the future and ways to solve them. Serious and negative implications of this characteristic became apparent when the UN employed 'fish scout' and fish farmers were interviewed. The demand for fish was so great that people insisted the farmers sell fish before they were big enough to harvest. The farmers were aware they must let the fish grow big enough to reproduce but the pressure was too great from people who wanted food on demand. The attitude that one must gratify needs immediately without considering long-term outcomes may be the reason why most, if not all, game animals are scarce in the area. Not only game animals have disappeared. I talked to several boys with slingshots who were hunting small birds for food. They informed me that even birds were hard to find. Also, several people said large burrowing rodents were rare when a few years ago they were plentiful and a readily available source of food. One cannot necessarily blame indigenous people for the mismanagement of animal food sources. People must feed their families and in individual's opinions (which are most likely true) if they did not obtain and use the food someone else would. Ecological imbalances have also occurred in the area as a result of the reliance on maize as a commercial crop. As farmers try to grow maize for income soils become exhausted and infertile. Because of poor soil, improper field management, and low market prices, most farmers cannot make profits on their produce. They

have little hope of being successful in income generating endeavours. Overall, the characteristics of the Lwawu system have led to indigenous residents choosing amongst several methods to survive within the rural system. These are discussed in the following section.

B. Strategies of Survival.

People have responded to the impacts of development inputs in a variety of ways. For this discussion these are labelled 'strategies of survival'. These strategies are based on the observation that people in Lwawu are inexorably tied to a market economy and national societal and economic forces. In addition they are aware of international lifestyles and events through interactions with missionaries and Western visitors to the area. It is often mentioned in literature that missionaries throughout modern African history created new material needs and wants amongst indigenous people including Western style clothes, tools, and houses (Pirie 1985). Consequently, an assumption of this discussion is that people in Lwawu desire Western-type goods and the means to increase their social and economic status within their community. Keeping in mind that they are seen from a Western perspective, strategies of survival identified in Lwawu were the following:

1. Commercial farm.
2. Work for the Mission or related facilities.
3. Entrepreneurial endeavours.
4. Resort to hopelessness/deviate behaviour.
5. Move 'apart but within'.

Discussion of these strategies are based on observation and conversation with individuals encountered in Lwawu and short case studies are used as examples of most strategies.

Commercial farm:

As mentioned previously, commercial farming is an important source of income for many people. However, many problems are encountered with this endeavour. A specific

example of the difficulties facing commercial farmers was brought to my attention while in Lwawu. There was one farmer who was the most successful and most likely the wealthiest in the area. From talking to his son it became clear that he knew proper field management and use of fertilizer. Yet, economic difficulties made farming very difficult. Low prices paid for produce and other common problems (discussed previously) were constantly encountered. But in addition, this farmer had a symbol of modernization, a tractor, which was forcing him almost to bankruptcy. The farmer had obtained a large government loan to buy the tractor. However, the government also stipulated which tractor to buy. Unfortunately, it was a poorly constructed Indian vehicle. In the hard soils of Lwawu this tractor was constantly breaking down and brought to the Mission for repairs. Of course, it also needed fuel which was expensive and had to be bought from the Mission. It is unknown why the farmer thought he needed a tractor although the missionaries discouraged him from buying it saying he could hire the Mission tractor for ploughing. It appears this was an example of a rural farmer desiring modern equipment perhaps thinking 'if it's modern, it's better' when more traditional methods would have been adequate. As mentioned previously, there was little indication that the commercial farmers in the area were successful financially. It must be assumed they farmed by choice and could quit if they wanted.

Work for the Mission or related facilities:

Perhaps the most desirable source of income in the area was working for the Mission. At most only 24 men were employed full time for the Brothers' residence, Sisters' residence, and Health Centre. In addition there were people working in the informal sector such as a tailor who would not have much income without the Mission buying robes for religious purposes. As explained previously, full time Mission employees appeared to have more material wealth when compared to their neighbours. This illustrates what most development programmes set out not to do. An objective of most programmes is to make more even income distributions amongst the target population. However, no one should deny the right of an individual to obtain wage

Plate VIII.1 Mr. Nilole sitting by his house which is under construction.

employment and use the income generated to build a nicer house and buy more commodities than his/her neighbour. As an example, the Mission employee I was most associated with, Mr. Nilole, who cooked at and cleaned the Brothers' residence, was an intelligent, hard working man in his early 20's making a living as many Westerners. During June and July 1985 he was building a new house and hired almost all of the labour needed for its construction (Plate VIII.1). His income was providing others with work. It may be assumed people work for the Mission by choice. As discussed in subsequent sections, however, the economic stratification caused by inequalities in income results in the emergence of tension.

Entrepreneurial endeavours:

A feeling of optimism came over me during several conversations with one of the most successful people in Lwawu, whose name was Mr. Katoloshi (Plate VIII.2) With the help of remittances from a brother in the Copperbelt, this young man had opened a small store (called a tearoom) and was constructing and managing three fish ponds. He was educated at St. Kizito School and spoke English. During my field research he was selling seeds and postage stamps from his tearoom. Unfortunately, he could not obtain any other commodities from a wholesaler in Mwinilunga because items were too expensive or unavailable. Consequently, he was losing money. Hopefully this situation will be remedied in the future. Mr. Katoloshi's fish ponds were more successful. The first two ponds were financed by the UN. With money raised by these and help from his brother, Mr. Katoloshi was building a third pond. To do this he had hired 5 labourers. He had managed his fish farms very well and had chosen an appropriate location for the ponds. They were about 2 kilometres away from other villages except his parent's and, thus, people were not constantly approaching him and demanding fish. The fish could be harvested when they were big enough. Whether Mr. Katoloshi succeeds or fails with his enterprises, he was clearly an exception to most people in the area. He has accepted responsibility for survival himself and should be encouraged and commended for his achievements. Other entrepreneurs in the area included other fish farmers and their success or

Plate VIII.2 Mr. Katoloshi in front of his tearoom, holding his child, and sitting by his wife. The other people are unknown.

failure will be determined by management practices of their ponds. Certainly the potential exists for other people to become entrepreneurs. Pritchett (1985) mentioned, and I concur, that once people see individual successes, ideas will spread. Development processes should be initiated by local individuals along with outside influences.

Resort to hopelessness/deviate behaviour:

It is difficult to discuss negative consequences of the Mission because religious issues are involved and these were not an objective of analyses. Understandably, from the missionaries point of view, a non-Catholic North American such as myself had little right to come into the area and judge intangible effects of the presence of the Mission in a period of two months. Nevertheless, there were indications of negative consequences, namely hopelessness and deviate behaviour, which may be linked to the Mission and certainly to the poor economy.

Due to the poor national economy, the false economy sustained by the Mission, and social status achieved by being closely associated with employment sources, a class of relatively privileged people appears to have emerged in Lwawu. This seems to have led to distinctions between social and economic status of people (Plates VIII.3 and VIII.4) While a linkage between economic and social status with hopelessness and deviate behaviour may only be assumed it nonetheless should be identified as a possible outcome of development processes in the area. The first indication of social problems occurred when my translator advised me that we should interview people early in the afternoon because they would be too drunk later in the afternoon. By 1500-1600 hours of every day men in most villages were obviously inebriated. Exceptions were members of the Apostolics, who are forbidden to drink alcohol. Alcoholic beverages were either beer made of millet or roots, or distilled spirits made of maize and with a very high alcohol content. All drink was made and sold by village women. Literature (Turner 1957) and personal communication with a Norwegian anthropologist conducting research northeast of Mwinilunga (Holm 1985) suggest that traditionally drinking was usually associated

Plate VIII.3 An employee of the health centre and his family.

Plate VIII.4 An unemployed man originally from Zaire. It is unknown whether all the children are his.

with ceremonies and special events.

Another disturbing feature of life in Lwawu was the increasing amount of thievery. In 1974 and 1979 I saw very few indications of this type of crime directed towards the Mission. However, a few weeks before I arrived in Lwawu in 1985 the clothing sent from North America and intended for distribution to indigenous people were stolen. While in Lwawu a piece of equipment from the Mission repair shop disappeared. After I left Lwawu, according to personal correspondence with my cousin, someone broke into the Brothers' residence during the night and stole several personal belongings of the missionaries. This thievery is significant because, in the past, the Mission and missionaries were well known and revered by most in the area and people would not dare steal anything from them. The missionaries did not openly worry about security when I was there in 1974 and 1979. In 1985, however, the threat of thievery from the Mission residences was great enough that arrangements were made to have someone in or near them at all times.

A hypothesis may be formulated that excessive drinking and crime are symptoms of hopelessness and hostility which an increasing number of Africans are feeling towards Western and/or the elite in their society. While Lwawu Mission has benefited many (if not most) people in the area, there is a growing number of indigenous residents who do not appear to view the Mission as an institution to be revered and respected. Instead, to them the Mission is a bastion of Western ideals and lifestyles which they cannot attain and a source of cheap goods to use as the need arises. For them there is little hope of making enough money through commercial farming or wage labour, of attaining status and prestige in their community, and, especially, of being given sufficient reasons to intitiate development processes on their own. Thus, the only alternative for them is to become overly reliant upon the Mission solely because it is a source of basic necessities either bought cheaply or donated to them. This would enable them to survive in the system but at the same time avoid the difficulties of living in a modern, market economy. Although I did not specifically ask anyone exhibiting this type of behaviour why he chose it, it was evident that many people heavily relied on the Mission. Throughout the day and

evening, people, mainly those not working or in close contact with the Mission, came to the Brothers' residence asking for food, clothing, or any commodity the Brothers were willing to sell. Unless the individual clearly needed the item, most people were told it was unavailable. The Brothers did not want to have people overly dependent on Mission supplied goods.

Move apart but within:

Two examples of moving within the area but out of direct Mission contact were encountered in Lwawu although one was outside the study area. The village used for an example was located about 2 km west of Cobra Road and accessed only by a dirt footpath. The parents of Mr. Katoloshi, the entrepreneur, lived in this village. Upon visiting it I was impressed that it appeared self sufficient in terms of food. Pigs (uncommon in Lwawu) and goats were corralled and there was evidence they were fed fodder from cassava. Small garden plots were fenced in and looked well tended. The village itself did not have the appearance of wealth but looked well cared for. I was told by Mr. Katoloshi that village members moved there to get more land. Mention was made that most of their food was grown by the villagers and there was no evidence of a dependency on the Mission for anything but clothing. In addition, people from this village thought food was more available, their income had increased, and people were more healthy and better off in 1985 than the past. Is this village an example of a 'happy medium' between traditional lifestyles and modern development inputs? I would answer a qualified 'Yes'. This village appeared to have rejected the life which evolves from living in close proximity to development agents and its consequent impacts yet remained near enough to them to attain their beneficial effects and services. This leads to the hypothesis that more people will choose to live in this manner as more imbalances negatively affect them. This will entail moving away from roads and central places. This may not have approval from the Chief and government. If people favourably view the lifestyle maintained by those living 'apart but within' Lwawu and choose it I expect that they will follow through no matter what anyone says.

This strategy of survival serves as an example, on a far smaller scale, of macro-level spatial decentralization as advocated by Chambers (1983). He discusses the economic, political, and social inequalities between urban cores and rural peripheries. Decentralization would disperse parts of the cores towards the peripheries and thus enable remote villagers to receive more equitable distributions of goods and services. In many ways, Lwawu 1985 could be characterized as centralized. The Mission was the economic centre of the area. It provided employment for some men and assistance to people engaged in relatively large scale economic endeavours such as farming. For most residents of the area it provided cheap goods and commodities thereby creating a micro-economy. Yet, though not planned by the missionaries, indigenous residents who had the closest contact with the Mission were those who received the most benefits from it. Inequities were formed between the core (Mission) and the geographic and/or social peripheries of the area. If people move away from the core, such as Mr. Katoloshi's family did, they could use elements of both core and periphery. Indigenous people personally would initiate ways to become self-sufficient in the necessities that can be produced locally while still benefiting from services offered at the Mission.

C. Conclusion.

The five strategies outlined above may be analyzed overall by commenting on the expected potentials each strategy holds for Lwawu residents in the future.

1. Commercial farm:

   As long as yields are low or variable and market prices remain low, this method of survival offers limited potentials as an income source. Nevertheless, because commercial farming is encouraged by the government and is seen as an integral part of national development programmes I expect that quite a few Lwawu residents will continue to choose this endeavour for their livelihood.

2. Work for the Mission or related facilities:

   This strategy of survival will most likely continue to be the most desirable way of earning

income amongst Lwawu residents. It should also continue to provide people with the means to achieve relatively high income levels and social status. There is likely to be only a limited number of full time jobs available at the Mission, however, and consequently I expect only a select few will have a hope of obtaining such a job.

3. Entrepreneurial endeavours:

   This strategy offers high potential to people willing to initiate the effort needed to succeed. I expect that only trained and/or educated people would be able to take the risks needed for an entrepreneurial endeavour. Those who do should be encouraged and assisted if necessary. Unfortunately, the local economy may only be able to support a limited number of entrepreneurial enterprises. An exception may be fish farming which should continue to have a ready market. If farmers are able to manage ponds properly and build up their stocks over a few years there is potential for these to be successful endeavours in the future.

4. Resort to hopelessness/deviate behaviour:

   Sadly, I expect that this survival strategy could become the only alternative to an increasing number of people. Escape mechanisms such as excessive drinking and crime are often the easiest way to cope with the difficulties of life. If people don't have the facilities (i.e. education, capital) to choose other forms of survival nor the assistance or motivation to achieve them, there are few choices but to lose hope and resort to over-reliance on the Mission and/or deviate behaviour.

5. Live 'apart but within':

   This offers the most practical and successful strategy of survival for the Lwawu system. Even though only two examples of this type of living were encountered in Lwawu, there is no reason why more people should not choose this way of life. By being apart but within, both traditional and modern amenities of life may be attained. People may become self sufficient in food and more attuned to their cultural heritage while still being within the reaches of health care or commodities such as Mission donated clothing. In choosing this

way of life people would make a conscious decision and thus have the self satisfaction of achieving a lifestyle on their own initiative. The desire for this type of life may not evolve quickly but once attained I expect that it would be the most effective, grass roots method of participatory development and would be truly beneficial and lasting.

IX. CONCLUSION

Are indigenous people of Lwawu better off because of development inputs? Because personnel at Lwawu Mission are the primary agents making development efforts, the Mission is the focus of this discussion. Government initiated inputs are also important but not enough data were collected to make conclusions about them. Before ascertaining the overall impacts of development inputs, the negative and positive aspects of the Mission not previously presented are discussed. These are based on qualitative observation while visiting Lwawu. They are important to form bases for recommendations concerning activities which development agents in systems such as Lwawu may perform to increase their effectiveness. Other conclusions are based on the data analyses chapters. Longitudinal study could not be undertaken but the cross-sectional analysis conducted for this thesis enables me to make predictions similar to those which would be obtained from lengthier investigations.

A. Negative Aspects of Lwawu Mission.

Central to discussion of negative aspects is that the Mission appeared to be a bastion of Western ideals and lifestyles amidst a culture torn between traditional ways of life and a market economy. The Mission was part of, yet separate from, the rural system of the area. It appeared to be viewed only as a source of cheap goods and services by some indigenous residents. In these people's minds, the Mission was not integrated well with the indigenous community. Perhaps the divergence between Mission and village life is best illustrated by the activities of the Brothers at Lwawu. While conducting interviews in villages it became apparent that the Brothers have rarely visited anyone in their villages. Most people were surprised and sincerely pleased that I would make the effort to sit with them and talk. Whenever a Brother circulated off of Mission grounds he was usually in a vehicle or on a motorbike. It made one wonder what indigenous people must think about outsiders who are ostensibly there to help them but who rarely approach people by walking with them or visiting them in their own residences. In addition, the diets of the Brothers were superior to indigenous people's in terms of both

quantity and quality. Every night except Friday meat was served (prepared by a local resident employed as a cook), along with a starch and vegetables such as carrots. Meals were simple and repetitive but nutritious and Western-style. Most likely indigenous people would not want to eat Western-style meals, but again one must wonder what they think of the differences in quantity between their diets and those of the missionaries. Also, the Brothers, even after decades of working at Lwawu, appeared paternalistic in their attitudes and behaviour toward indigenous people.

Another negative aspect of the Mission was the apparent lack of co-ordination and consultation between the Brothers and Sisters concerning development programmes. Granted, both Brothers and Sisters knew what the others were doing but there was no integration between them using skills of one group to assist the other. The Sisters stated that nutrition classes for local women are needed, but the Sisters do not have agricultural backgrounds to assist women in growing nutritious vegetables. The Brothers, on the other hand, are familiar with agricultural practices but unfamiliar with teaching nutrition. It seems logical that the Brothers and Sisters could formulate a programme using each other's skills. Yet, there has been no discussion between them on ways to initiate classes of this type. Another example of the lack of co-ordination deals with the Health Centre. Apparently for the last few years the nurses at the Health Centre have needed a microscope to help make diagnoses of malaria. During my stay at Lwawu an American woman living in the area and sick with chloroquine resistant malaria was misdiagnosed and nearly died at Lwawu Health Centre. A microscope and correct diagnosis of her condition would have alleviated much of her suffering. Yet the Brothers at the Mission, who should have been able to have churches in the USA send a microscope years ago, said it was up to a priest in Mwinilunga to take care of the matter. Overall, missionaries appeared to plan and offer their services individually with little mutual co-ordination.

B. Positive Aspects of Lwawu Mission.

One aspect in Lwawu that impressed me as a sincere effort to benefit indigenous people was the manner in which the Sisters interacted with everyone in the area. Four Sisters were at the Mission during field research. All were involved with projects which reached directly to the people. These included pre-school classes for children, sewing classes for women, distribution of food and clothing to the disabled and infirm, and nursing care at the Health Centre. The Sisters talked daily with people in their villages. When Sister Madeline and I visited villages conducting the women's survey, it was obvious everyone knew and liked her. By working with and amongst people (along with being Zambian), the Sisters have become attuned to the wants and needs of local individuals. Their approach to development may be viewed as initiating processes on a grass roots, participatory level.

Development inputs intitiated by the Brothers at Lwawu have been relatively large scale and directed to the population as a whole. From 1964-1978 the Brothers who taught as St. Kizito Upper Primary School provided a high quality education enabling many local boys to continue their education and obtain jobs in the industrial sector of Zambia. Also, the Mission has employed dozens of men as wage labour throughout its existence and thus contributed to the local economy. By having two sturdy tractors available for hire, the Brothers have also made it possible for commercial farmers to have their fields ploughed and harvested crops brought to market in less time and effort than by traditional methods. Buildings have been constructed by the Brothers for school teachers, the UN fish scout, and the government marketing board. During July 1985, a building was being constructed to house a sunflower seed press which should provide a cheap source of cooking oil for local residents. Finally, in 1984 a hydro-electric plant was constructed and it provides 24 hour electricity to Mission residences and the Health Centre. Overall, the Brothers are constantly busy with relatively large scale projects designed to help satisfy the needs of people in the area.

C. The Grey Area, or, Should the Mission in Lwawu be there?

Throughout this thesis, the Lwawu system has been analyzed and data presented illustrating the impacts of development inputs on geographical and attitudinal elements of the Lwawu population. Part of the data analyses emphasized that people in Lwawu are tied to and affected by national economic and societal conditions. Therein lies the key for drawing conclusions concerning whether or not the Mission has been beneficial to Lwawu residents. Because a road led to the Paterson farm at Matonchi during colonial times, it may be assumed that residents along it had interaction and awareness of modern influences since the mid-20th century. Although not direct recipients of colonial development and influence, people in the region were not isolated. There is reason to believe they would have welcomed any inputs into their rural system and thus gain access to Western commodities and ways to emulate Western lifestyles. In other words, it seemed inevitable that Lwawu, or a nearby area, would attract development agents in one form or another. In this case they were Roman Catholic Franciscans. Indeed, the presence of missionaries in Africa has increased substantially throughout the 20th century. In 1910 the total number of expatriate missionaries in all of Africa was 10,800. This number increased to 37,300 by 1974 (Kendall 1978). Most likely if the Catholics had not arrived another denomination or group would have. It should be accepted that outsiders are an integral part of rural African systems. The Roman Catholics in Lwawu have brought many benefits to Lwawu such as health care, education, agricultural assistance, and the opportunity for some to make relatively high incomes. Therefore, since 1955 the Mission has benefited the indigenous population. This is not without qualifications because there are many weaknesses with the enclave the Mission personnel have created. Recommendations for future objectives and inputs which development agents could initiate or expand are presented in the following sections of this thesis.

D. Recommendations.

The course of action development agents take at the present will likely determine the welfare and well-being of people in Lwawu in the future. Either the missionaries can maintain a status quo by concentrating solely on evangelization, relatively large scale projects, and paternalistic care of indigenous people, or they can identify problems in the area and act upon them using new methods and ideas. These suggestions, as outlined below, are neither radical nor grandiose. They are simple and easily implemented and it is hoped they will stimulate the capable personnel already at Lwawu Mission.

Two simple changes would foster greater understanding and mutual benefits between the missionaries and indigenous residents. First, if the Brothers would spend more time walking around the area and visiting people in their villages a rapport would inevitably develop between them and local individuals. The Brothers would learn more about the grass roots, individual needs of others and villagers would experience first hand the concern which the Brothers have towards them. Second, by co-ordinating the ideas, skills, and knowledge between Brothers and Sisters, the projects and services offered by the Mission would be more efficient and beneficial to the local population. Mutual co-operation would be more helpful to local residents than the separate activities of the two groups of missionaries which were observed in 1985. Neither of these suggestions involves great amounts of change and the outcomes clearly would be worth the effort. Other recommendations are derived from data analyses and are discussed under the headings: spatial distributions and mobility, demographic characteristics, and attitudes concerning development indicators.

Spatial distributions and mobility:

There are no obvious solutions concerning the concentration and permanence of people or the influx of migrants into Lwawu. I expect people to continue moving into the Lwawu area, locating near the Mission or motor roads, and living there permanently. Other studies in Zambia report similar situations (Crehan 1981, Jaeger 1982). In 1985 the missionaries had no

formal plan as a response to the anticipated continuous increase in the number of people moving to the area. They would be well-advised to formally identify the existence of this phenomenon and formulate strategies to cope with the situation. Although unknown, there must be a finite capacity to the services offered at the Mission in terms of the number of people which the services can handle. Jaeger (1981) suggests service centres such as a health clinic can handle 8650 people within a 15 km radius. Although exact figures are not available, there is reason to believe that within 15 km of Lwawu there are at least 8650 people. There were at least 9600 medical records of different individuals in the Health Centre, though it may be assumed many of the individuals were dead. (On the other hand, many residents have never used the centre.) In all likelihood the Health Centre has reached or surpassed its capacity to efficiently serve the population of Lwawu. If development agents could keep track of estimated numbers of people moving into the area they could anticipate the amounts of services which are needed.

More important than the anticipation of new arrivals are the ways in which the missionaries can encourage people to live 'apart but within' the Lwawu system and thus lessen the demand for services. Because the villagers observed surviving by this strategy seemed self sufficient in food and in control of their lives, it follows that encouragement of this way of life should be a high priority of the Mission. Perhaps the best way to encourage this type of redistribution would be to talk with people in their villages and discuss alternative lifestyles. In this way a development agent could suggest different approaches to living but leave the final decision to the rural resident. It would be interesting to observe Lwawu in 7-10 years to see if people are adopting the survival strategy of living 'apart but within'.

Demographic characteristics:

It is even more difficult to offer realistic solutions concerning the large population living in Lwawu. Most indicators in Lwawu suggest there are too many people in the area and that the population will continue to increase. Because artificial birth control is expressly forbidden by the Roman Catholic Church and because the Church is the main outside influence

in Lwawu, contraceptives cannot be considered as a viable way to deal with this problem. One would expect, however, that the missionaries would recognize that the rural system would be better off with fewer children and at least actively encourage people to limit family size naturally. There was no indication that this was happening. The only missionary who seemed willing to discuss the issue was a European priest who arrived in Lwawu two days before I left. He had lived in Zambia many years and had been transfered to Lwawu. He informed me that the Catholic Church would encourage limiting family size after parents had made the decision but would not actively instruct or persuade parents to control family size, especially by use of contraceptives. Therefore, the only alternative is that the missionaries should plan on significant increases in the number of children being born in the area and the inevitable consequences. This means that the proportion of children under age 14 will increase. Once these children reach adulthood, the Mission must ask, where will these people live and what strategy of survival will they choose? The national economy and urban areas of Zambia in all likelihood will not be able to absorb additional labour. The Lwawu area will most likely reach capacity in a few years in terms of supporting commercial farming and entrepreneurial enterprises. Living 'apart but within' is a viable alternative if people are willing to intitiate change on their own. (The irony, of course, is that self-sufficiency in food is labour intensive and requires large family sizes). The strategy that I expect most people to choose and that the missionaries should anticipate is one of over-reliance on the Mission with the accompanying escape mechanisms this strategy of survival produces.

Attitudes towards development indicators:

Of the development indicators examined in Lwawu, two appear to be the most important in determining the overall well-being of Lwawu residents: levels of health and food availability. The reasons for choosing these are that levels of health had a positive association with opinions of overall well-being and that, as an essential element of life, decline of food availability since 1964 makes it a significant area of concern. If development agents in Lwawu

and similar rural systems elsewhere in Africa want to plan for the future and bring benefits to indigenous residents, these are the elements to focus upon. As apparent in the remainder of this section, these two elements are directly related.

The Health Centre has been an integral part of assistance provided by the Mission since 1964. The Sisters who have staffed it have been well-trained, capable, and sincerely concerned about the people they treat. Nurses were handicapped by a lack of equipment and drugs but managed adequately with what they had. Yet, health care appeared to be focussed entirely on curative rather than both curative and preventive treatment. Consider the two prominent afflictions in the area, malaria and malnutrition. Malaria, especially chloroquine resistant, is difficult to control and prevention of it is almost impossible. However, the root causes of malnutrition are relatively easy to identify. The nurses told me how malnutrition could be alleviated including conducting nutrition classes. But, why are nutrition classes not taught? Apparently because there hasn't been a co-ordinated effort to combine agricultural assistance and preventive health care. This observation is the basis of the most practical idea to alleviate the basic problems which afflict the Lwawu system. The Brothers could concentrate development efforts on encouraging people to increase the growing of nutritious vegetables in individual garden plots and to seek other ways of raising food for individual consumption. People in the area already have the skills and proper management practices to raise vegetables on a small scale. They most likely have neglected their gardens, however, in favour of larger scale commercial crops. Cash crops will not prevent or alleviate malnutrition. A variety of foods must be consumed. Proper and nutritious food was available in Lwawu but not in large enough quantities to truly improve diets or was grown primarily to sell to the Mission. Rather than looking to the future in terms of large scale projects directed to the population as a whole and towards commercial farming, inputs should be directed to improving the lives of individuals. This would not entail working with everyone in the area. Ideas spread as people see the successes of others. Included in these methods could be experiments in new ways to raise traditional sources of food. As an example, Malaisse and Parent (1982) point out that wild

large rodents of central Africa have a nutritive value on the same level as beef or chicken. They suggest some species of rodents could be raised in cages and used as an important source of food. There most likely are many small-scale projects and ideas which, through a co-ordinated effort by all Mission personnel together with indigenous people, could form the basis for development inputs at a grass roots level which would truly benefit the majority of people at Lwawu. This recommendation for development agents is illustrated in the diagram on the following page.

E. Strategies of Survival and their Effects on Spatial Distributions.

Future spatial distributions of people in Lwawu will depend largely upon the strategy of survival they choose. Residents who depend on the Mission or related facilities for their livelihood most likely will inhabit areas near the Mission or accesses to it. Thus, the attractiveness of Mission Road as well as Cobra, Ntambu, and New roads will continue. I would expects people who live along these roads to be those who work for the Mission or related facilities, have reliance on the Mission for support, work as entrepreneurs, or who are commercial farmers. The reasons for these predictions are discussed below.

The missionaries advocate monogamous marriages and it follows that people working for them or in close contact with them are encouraged to follow this practice. Therefore, It expect that men working for the Mission will choose to live as a nuclear family if they have not already done so. Ntambu Road was the location of many nuclear and small families and this would be the most likely place for them to locate. Those people who lack the skills, education, and capital to choose other strategies of survival and are over-reliant on the Mission or aid from other outside agencies likely will want to live in large villages. This is because large villages would provide additional support to men who would have difficulty managing as a nuclear or small family (especially when women perform most of the food gathering and all food preparation). Also, large villages offer many drinking companions. Thus, people living in this strategy of survival likely will locate along Cobra and New roads where there is plenty of space.

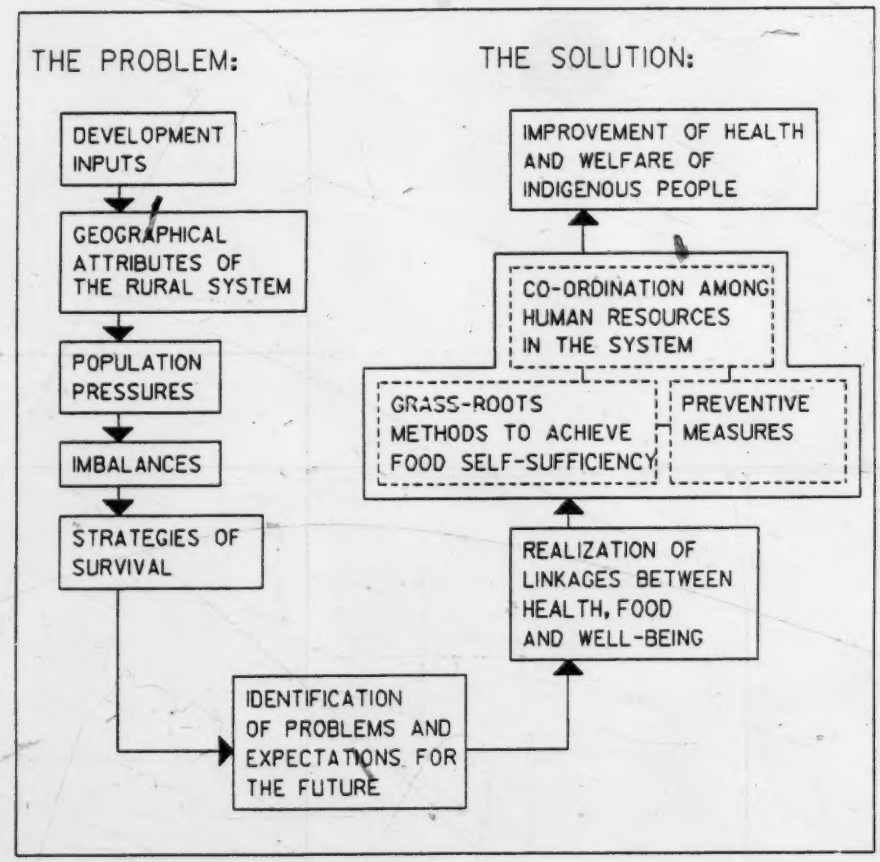
THE PROBLEM:
THE SOLUTION:
DEVELOPMENT INPUTS
GEOGRAPHICAL ATTRIBUTES OF THE RURAL SYSTEM
POPULATION PRESSURES
IMBALANCES
STRATEGIES OF SURVIVAL
IDENTIFICATION OF PROBLEMS AND EXPECTATIONS FOR THE FUTURE
REALIZATION OF LINKAGES BETWEEN HEALTH, FOOD AND WELL-BEING
GRASS-ROOTS METHODS TO ACHIEVE FOOD SELF-SUFFICIENCY
PREVENTIVE MEASURES
CO-ORDINATION AMONG HUMAN RESOURCES IN THE SYSTEM
IMPROVEMENT OF HEALTH AND WELFARE OF INDIGENOUS PEOPLE

Figure IX.1 A framework for development agents in a rural system such as Lwawu.

It cannot be stressed enough that an increasing number of refugees will move to the area and inhabit many, if not most, of these villages which will add to the problems and difficulties of providing services for the entire area. Because of the limited number of non-fish farming entrepreneurs which the area could support, people choosing entrepreneurial endeavours as a form of survival are not expected to have a significant impact on spatial distributions. Obviously, any entrepreneur will likely choose to live near his consumers and thus live near the Mission or accesses to it. Commercial farmers are expected to continue to live near the Mission rather than their fields because of the services provided by the Mission. The Mission tractor is hired by most farmers to plough fields and transport harvested crops. Also, repair work on tools and the marketing depot are at or near the Mission. There would be no advantage to live away from the Mission when it is the base of most farming operations. Most commercial farmers in 1985 had long-term ties to the area. Consequently, I expect them to continue to live in the well-established villages along Mission Road and near Matonchi unless they choose to live as a nuclear family and relocate, most likely along Ntambu Road.

I expect redistributions away from the Mission to occur amongst people choosing to live 'apart but within' and possibly amongst fish farmers. As previously discussed, I expect that an increasing number of people to choose to live away from the Mission and motor roads but still within their influences. They will most likely move to the west and north of the Mission where there is available land. Because the demand for fish is high which lead to farmers having to sell or barter fish before they are ready, I expect they will want to move away from large concentrations of people. The problem with this is that they must locate their fish ponds along a stream. The Lwawu river may be too large and often smaller streams already have villages near them. It is difficult to predict the future spatial distributions of fish farms and the farmers' villages. Another potential variable should be considered in future planning related to people living away from the Mission and established roads. If more and more people move away from concentrations of people, it may only be a matter of time before the area they move to also becomes congested. If, for example, three or four villages relocate to the same general

area, I would expect them to desire the benefits of a road which would make supplies easier to transport. Usually if enough people are involved they will build their own road or have the Mission help them build it. If that were to happen, more people would likely move to the area and, again, the problems associated with high concentrations of people may be manifested.

F. Final Comments.

Lwawu Mission serves as an example of how a central place, in a remote part of a developing country, that is reliant upon a market economy and ties to national and international lifestyles and infrastructure may lead to socio-economic and ecological imbalances in a rural system. Lwawu Mission has become a service centre and is in a relatively high level of settlement hierarchy. Those who established and managed the Mission since 1955 did not realize how successful they would become. Indigenous people clearly view the area as having a high place utility. But the missionaries did not appear to have considered the impact the Mission would have on traditional African culture and the carrying capacity of the land. The Mission is a desirable destination for migrants and offers enough services that residents are satisfied to live there indefinitely. Unlike centres in the developed world, the Lwawu rural system does not have the resources, capital, and national government support to maintain the population that lives there and evolve into a complex market-oriented society. From this analysis I have learned that in Lwawu the most beneficial development inputs would encourage a return or continuation of a more subsistence level, *traditional* lifestyle amongst indigenous residents such as the survival strategy of living 'apart but within'. There is no reason why this approach should not be encouraged in other rural areas of Africa which are in the geographic peripheries of their respective national economies and infrastructure.

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Appendix

Questions asked during interviews.

A. Permanence and location questions:

When did your village move to its present location?
Where did you live before moving to this location?
Why did you move?
How long do you intend to live at this location?

B. Income questions:

How many people in your village work for the Mission or school?
Has your village income increased since 1978? Since 1964?
Does anyone in your village receive any money from village members in town?

C. Agriculture and food related questions:

Has village crop output increased since 1978? Since 1964?
Is the soil good for growing crops?
Do you have enough farm labour when you need it?
Is food more available now than in 1978? In 1964?
Do you think there should be more cattle ranchers in the area?
Do people in your village go hunting? Where?
Do you think there are as many game animals now as in the past? Why/why not?
Is firewood easy to find? If not, what can be done?

D. Migration questions:

How many people from your village have moved to town?
Why and when did they move?

E. Urban attitudes:

Has anyone in your village been to town?
Why did they go? For how long? How many times have they been?
What do they like best about town? The least?
Do you think there are more job opportunities in town?
If you were to move to town do you think you would obtain a job?
Do you think people in town earn more money than rural people?
Where would you prefer to live, here or in town?

F. Health questions:

Are people healthier now than in 1978? In 1964?
Are there more people in the area now than in 1978? In 1964? Why?

G. Children questions:

Do you want to have as many children as you can or is a certain number better?

H. Other questions:

How many people in your village have had some formal education?
How many men in your village are between 15 and 30 years old?
Overall, are you and other village members better off now or in 1964?